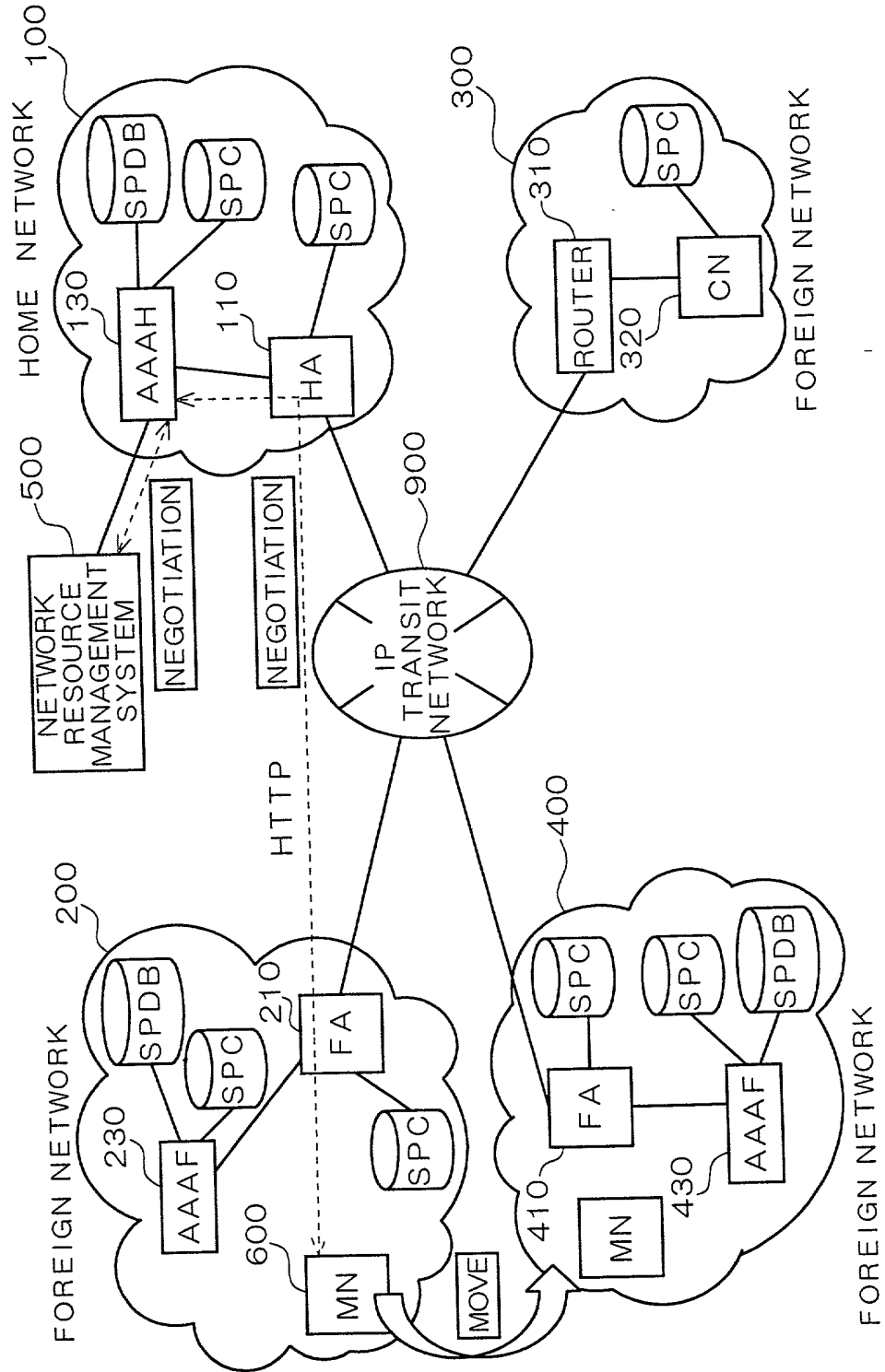


FIG. 1



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FIG. 2

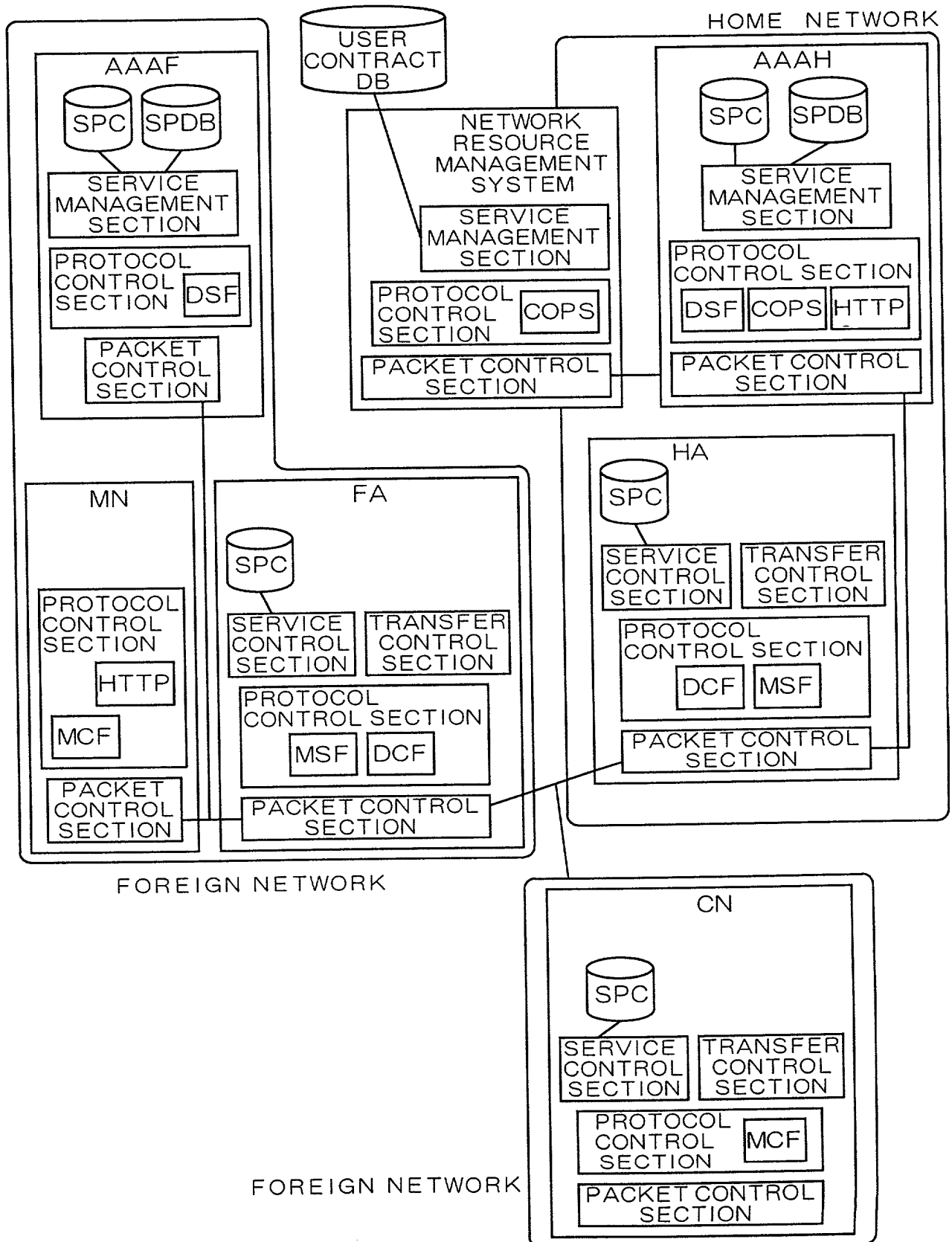


FIG. 3

MESSAGE TYPE	MESSAGE TRANS- FERING NODE	NODE WHICH RECEIVES MESSAGE AND MESSAGE TO BE TRANSFERRED AFTER RECEIVING MESSAGE (MESSAGE TO BE TRANSFERRED AFTER RECEIVING MESSAGE /DESTINATION NODE)					
		MN	CN	HA	FA	AAAF	AAAH
MIP REGISTRATION REQUEST	MN	—	—		MIP REGISTRATION REQUEST / HA	—	—
	MN	—	—		AMR/ AAAF	—	—
	FA	—	—	MIP REGISTRATION REPLY/FA	—	—	—
MIP REGISTRATION REPLY	FA	TERMINAL	—	—	—	—	—
	HA	—	—	—	—	—	—
MIP BINDING UPDATE	HA	—	MIP BINDING ACKNOWLEDGE /HA	—	—	—	—
	CN	—	—	MIP BINDING UPDATE/CN	—	—	—
MIP BINDING ACKNOWLEDGE	CN	—	—	HAA/ AAAH	—	—	—
	FA	—	—	—	—	AMR/ AAAH	—
AMR	AAAF	—	—	—	—	—	HAR/ HA

FIG. 4

MESSAGE TYPE	MESSAGE TRANS- FERING NODE	NODE WHICH RECEIVES MESSAGE AND MESSAGE TO BE TRANSFERRED AFTER RECEIVING MESSAGE (MESSAGE TO BE TRANSFERRED AFTER RECEIVING MESSAGE /DESTINATION NODE)					
		MN	CN	HA	FA	AAAF	AAAH
AMA	FA	—	—	—	MIP REGISTRATION REPLY/MN	—	—
	AAAF	—	—	—	—	AMA/ FA	—
	AAAH	—	—	MIP BINDING UPDATE/CN	—	—	—
HAR	AAAH	—	—	HAA/ AAAH	—	—	—
	HA	—	—	—	—	—	AMR/ AAAF
	AAAH	—	—	SCA/ AAAH	—	—	—
SCR	AAAF	—	—	—	SCA/ AAAF	—	—
	FA	—	—	—	—	SCR/ FA	—
	FA	—	—	—	—	SCA/ AAAH	—
SCA	AAAF	—	—	—	—	TERMINAL	—
	HA	—	—	—	—	—	SCR/ AAAF
	FA	—	—	—	—	—	—
ROUTER ADVERTISE- MENT	FA	MIP REGISTRATION REQUEST / FA	—	—	—	—	—

FIG. 5

FIG. 8

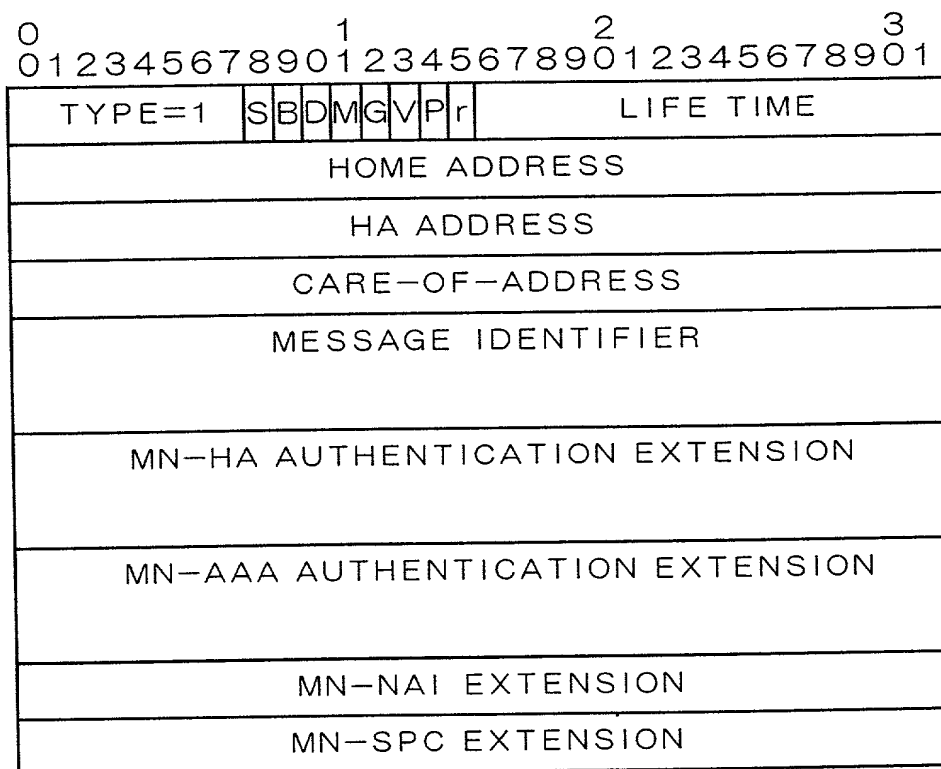
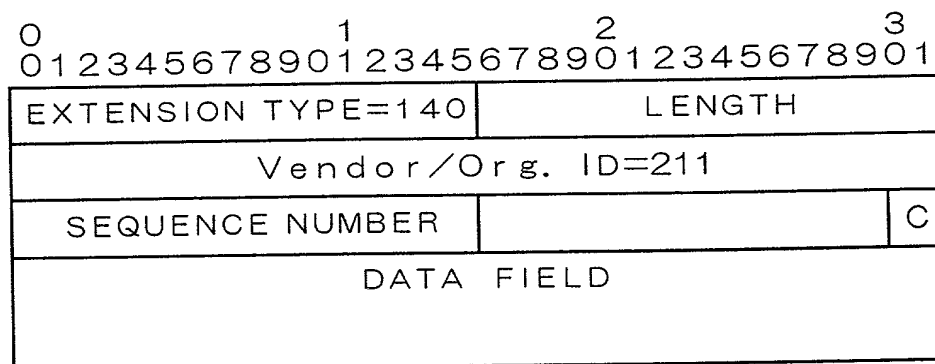


FIG. 9



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FIG. 10

0	1	2	3
01234567890123456789012345678901			
TYPE=3			
CODE			
LIFE TIME			
HOME ADDRESS			
HA ADDRESS			
MESSAGE IDENTIFIER			
MN SERVICE PROFILE EXTENSION			

FIG. 11

0	1	2	3
01234567890123456789012345678901			
TYPE=18			
A I M G R E S E R V A T I O N			
LIFE TIME			
HOME ADDRESS			
CARE-OF-ADDRESS			
MESSAGE IDENTIFIER			
PROFILE CACHE EXTENSION			

[illegible]

FIG. 13

0										1										2										3									
012345678901										2345678901										012345678901										2345678901									
TYPE=19										RESERVATION										STATUS																			
HOME ADDRESS																																							
MESSAGE IDENTIFIER																																							

FIG. 14

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[illegible]

FIG. 16

0										1										2										3																																																																					
0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1																																																										
RADIUS										PCC										Flags										A										W										Ver										Packet Length																																							
Identifier																																																																																																			
Next Send (Ns)																																								Next Received (Nr)																																																											
AVPs																																																																																																			

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FIG. 17

<DIAMETER Header>
<AA-Mobile-Node-Request Command AVP>
<Session ID AVP >
<User-Name AVP>
<MIP-Registration-Request AVP>
<MN-FA-Challenge AVP>
<MN-FA-Response AVP>
<Mobile-Node-Address AVP>
<Home-Agent-Address AVP>
[<Previous-FA-NAI AVP>]
[<MN-FA-SPI AVP>]
[<MN-SPC AVP>]
<Timestamp AVP>
<Initialization-Vector AVP>
{<Integrity-Check-Vector AVP> OR <Digital-Signature AVP>}

FIG. 18

<DIAMETER Header>
<Home-Agent-MIP-Request Command AVP>
<Session ID AVP>
<User-Name AVP>
<MIP-Registration-Request AVP>
<MN-HA-SPI AVP>
<HA-to-MN-Key AVP>
<MN-to-HA-Key AVP>
<FA-HA-SPI AVP>
<HA-to-FA-Key AVP>
<MN-FA-SPI AVP>
<MN-to-FA-Key AVP>
<Home-Agent-Address AVP>
<Mobile-Node-Address AVP>
[<Service-Profile-Cache AVP>]
<Session-Timeout AVP>
<Timestamp AVP>
<Initialization-Vector AVP>
{<Integrity-Check-Vector AVP> OR <Digital-Signature AVP>}

FIG. 19

<DIAMETER Header>
<AA-Mobile-Node-Answer Command AVP>
<Session ID AVP>
<Result-Code AVP>
[<Error-Code AVP>]
<MIP-Registration-Reply AVP>
<MN-FA-SPI AVP>
<FA-to-MN-Key AVP>
<FA-HA-SPI AVP>
<FA-to-HA-Key AVP>
<Home-Agent-Address AVP>
<Mobile-Node-Address AVP>
[<Service-Profile-Cache AVP>]
<Session-Timeout AVP>
<Timestamp AVP>
<Initialization-Vector AVP>
{<Integrity-Check-Vector AVP> OR <Digital-Signature AVP>}

FIG. 20

<DIAMETER Header>
<Home-Agent-MIP-Answer Command AVP>
<Session ID AVP>
<Result-Code AVP>
[<Error-Code AVP>]
<MIP-Registration-Reply AVP>
<Mobile-Node-Address AVP>
<Home-Agent-Address AVP>
[<Service-Profile-Cache AVP>]
<Timestamp AVP>
<Initialization-Vector AVP>
{<Integrity-Check-Vector AVP> OR <Digital-Signature AVP>}

FIG. 21

<DIAMETER Header>
<Service-Change-Request Command AVP>
<Session ID AVP>
<Previous-FA-NAI AVP>
<Service-Profile-Cache AVP>
<Timestamp AVP>
<Initialization-Vector AVP>
{<Integrity-Check-Vector AVP> OR <Digital-Signature AVP>}

FIG. 22

<DIAMETER Header>
<Service-Change-Request Command AVP>
<Session ID AVP>
<Result-Code AVP>
[<Error-Code AVP>]
<Timestamp AVP>
<Initialization-Vector AVP>
{<Integrity-Check-Vector AVP> OR <Digital-Signature AVP>}

FIG. 23

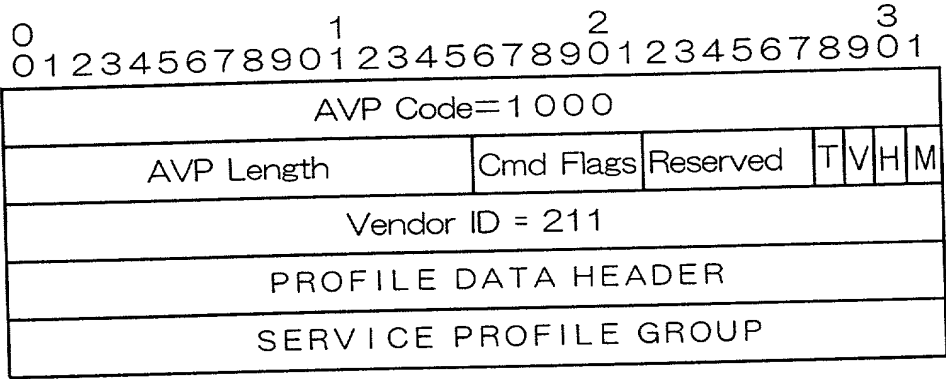


FIG. 24

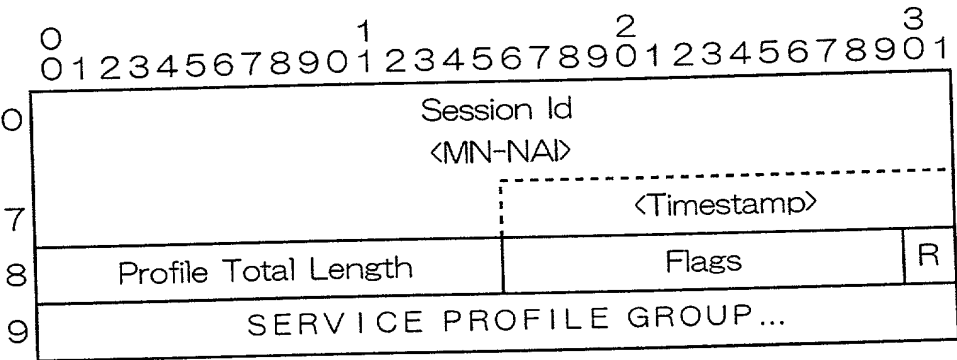


FIG. 25

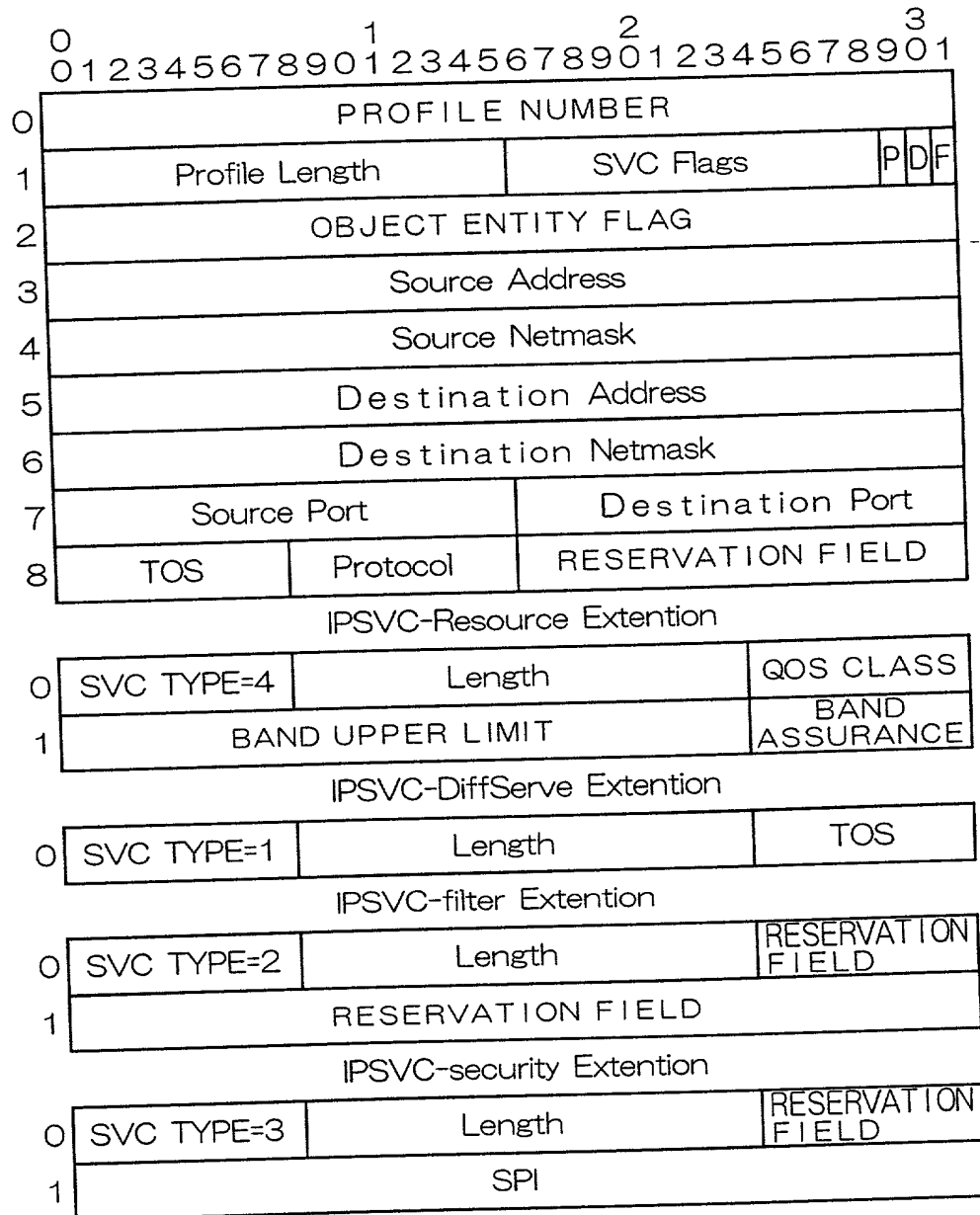


FIG. 26

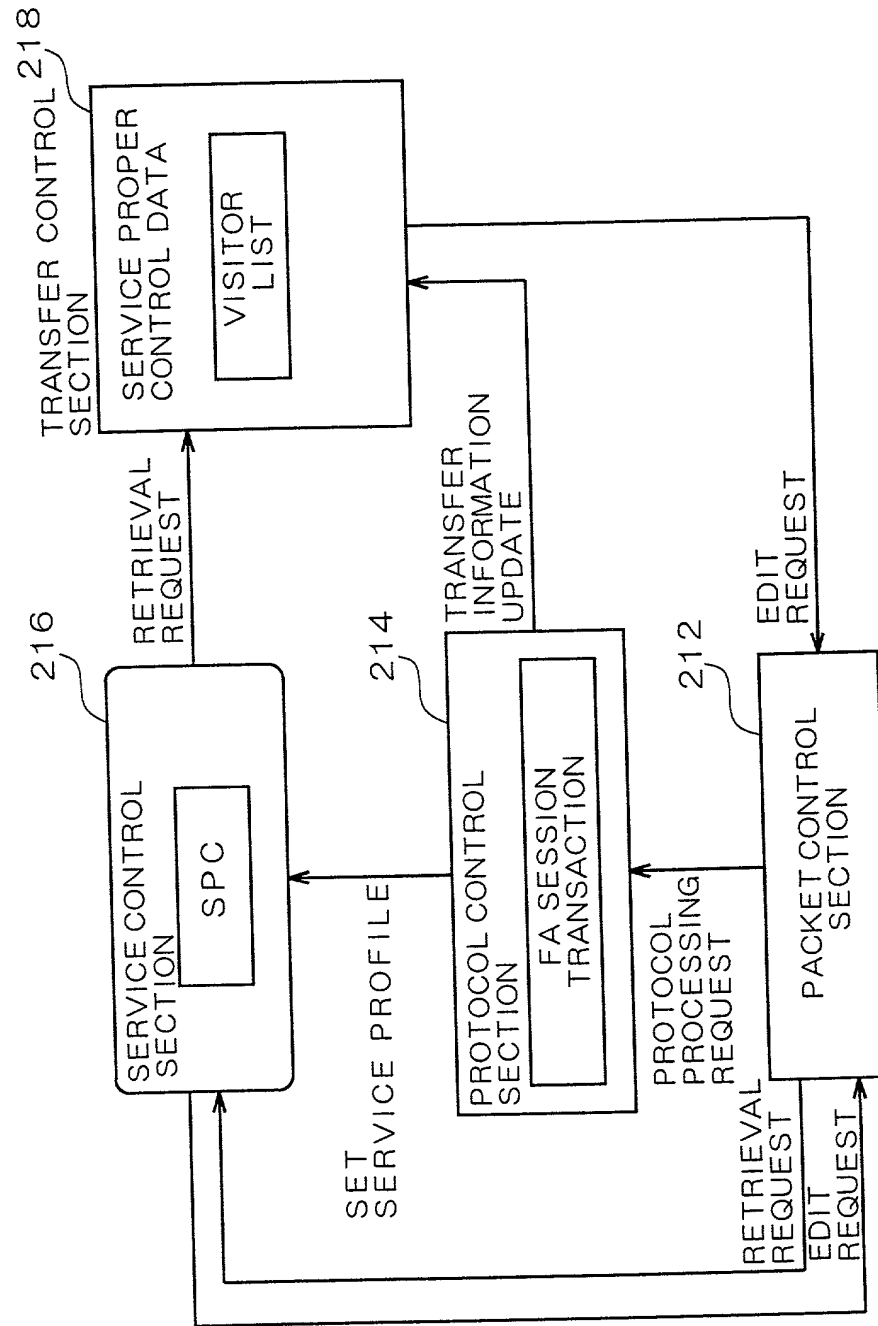


FIG. 27

STRUCTURAL ELEMENT	EXPLANATION
SESSION ID	<NAI OF MN> <32 BIT VALUE> <OPTION>
SESSION TIMER	TERM OF VALIDITY FOR THIS TRANSACTION

FIG. 28

STRUCTURAL ELEMENT	VALUE	EXPLANATION
PROFILE NUMBER	1	
OBJECT ENTITY	01000000	FROM LEFT, FIRST BIT IS HA, SECOND BIT IS FA, THIRD BIT IS CN. ONLY FA IS OBJECT HERE.
SOURCE IP ADDRESS	10.10.10.1	SOURCE IP ADDRESS OF USER PACKET TO BE SERVICE OBJECT. ADDRESS OF CN IS INDICATED HERE.
SOURCE NET MASK	255.255.255.0	NET MASK FOR SOURCE IP ADDRESS
DESTINATION ADDRESS	10.10.20.1	DESTINATION IP ADDRESS OF USER PACKET TO BE SERVICE OBJECT. ADDRESS OF MN IS INDICATED HERE.
DESTINATION NET MASK	255.255.255.0	NET MASK FOR DESTINATION IP ADDRESS
SOURCE PORT NUMBER	0	SOURCE PORT NUMBER OF USER PACKET TO BE SERVICE OBJECT. NOTHING IS SPECIFIED HERE.
DESTINATION PORT NUMBER	0	DESTINATION PORT NUMBER OF USER PACKET TO BE SERVICE OBJECT. NOTHING IS SPECIFIED HERE.
BAND CONTROL EXTENSION INFORMATION		
SERVICE TYPE	4	BAND CONTROL
QoS CLASS	2	QoS CLASS BEING USED
BAND UPPER LIMIT	255	UPPER LIMIT OF AVAILABLE BAND
BAND ASSURANCE	0	OFF

FIG. 29

STRUCTURAL ELEMENT	EXPLANATION
IP SOURCE ADDRESS	HOME ADDRESS OF MN THAT IS NOTIFIED WITH REGISTRATION REQUEST OR AMA
LINK LAYER SOURCE ADDRESS	ADDRESS OF MN LINK LAYER (MAC)
UDP SOURCE PORT	UDP SOURCE PORT NUMBER OF MN
HA ADDRESS	ADDRESS OF HA FOR FORWARDING REGISTRATION REQUEST, NOTIFIED WITH REGISTRATION REQUEST OR AMA
REGISTRATION REQUEST IDENTIFIER FIELD	IDENTIFIER FOR ASSOCIATING REQUEST WITH RESPONSE
LIFE TIME	TERM OF VALIDITY FOR REGISTRATION REQUEST
AUTHENTICATION INFORMATION	AUTHENTICATION INFORMATION FOR FA AUTHENTICATE MN

FIG. 30

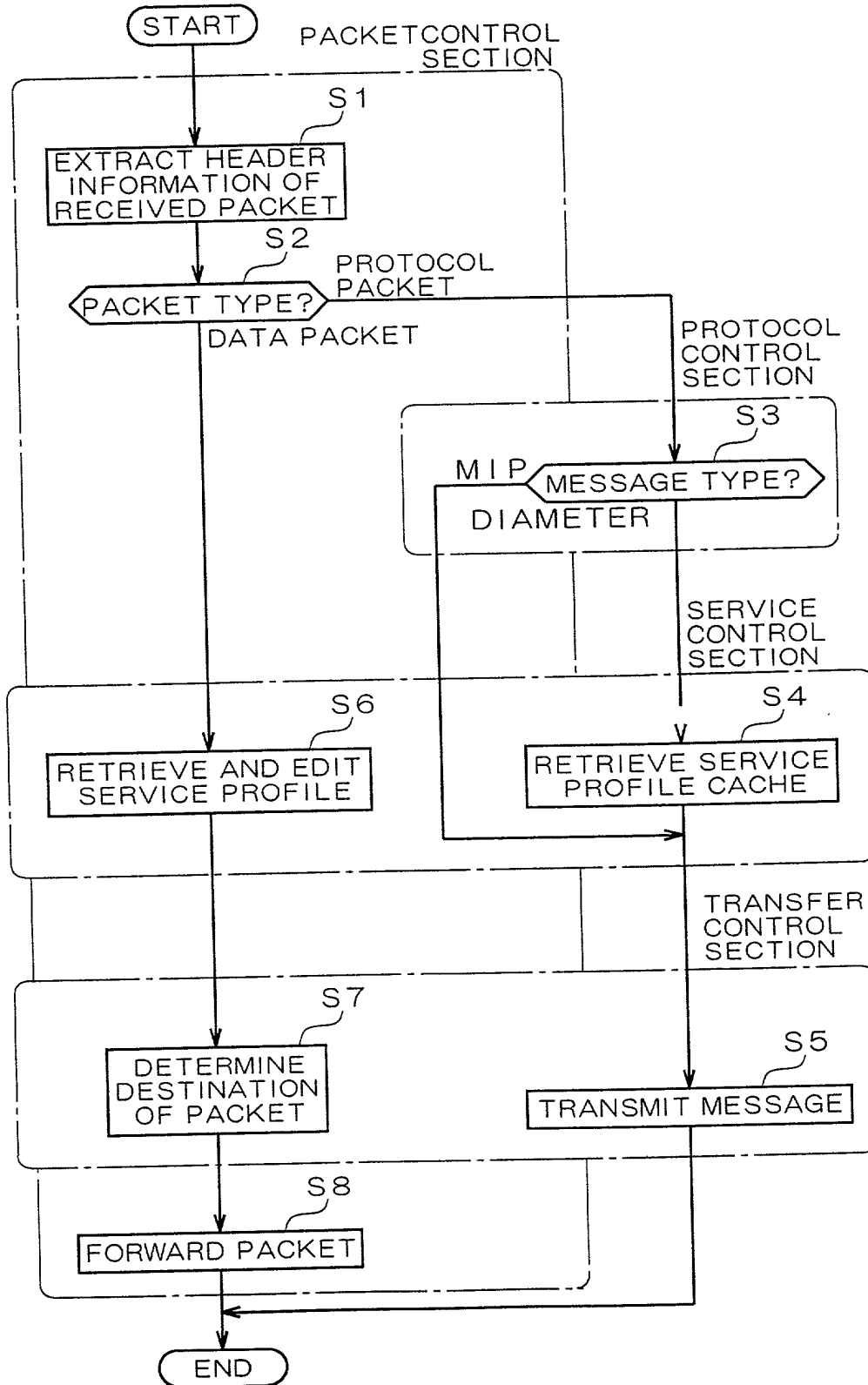


FIG. 31

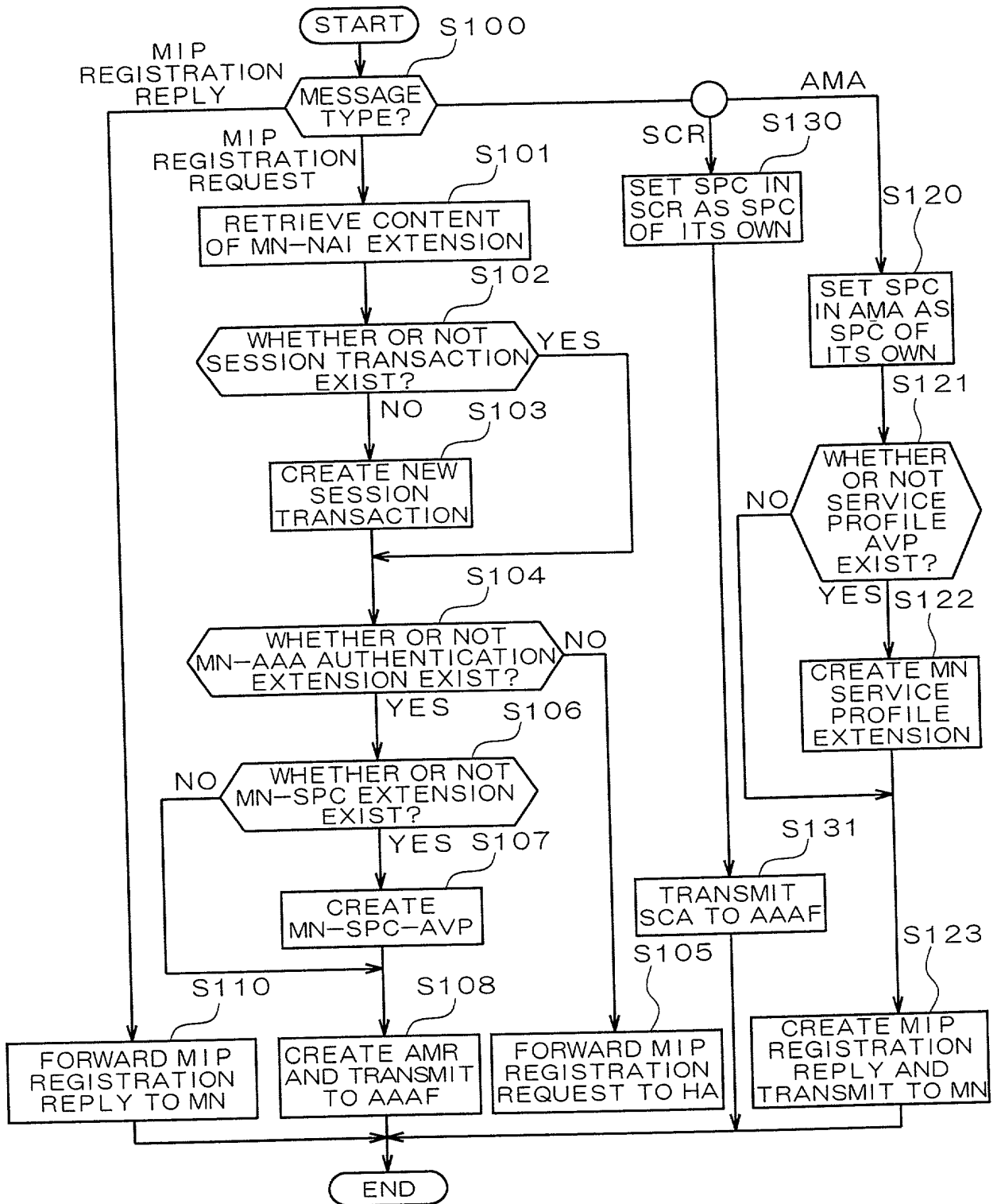


FIG. 32

STRUCTURAL ELEMENT	EXPLANATION
HOME ADDRESS	HOME ADDRESS ASSIGNED TO MN
CARE-OF-ADDRESS OF MOBILE TERMINAL EQUIPMENT	IP ADDRESS OF FA TO WHICH MN CURRENTLY CONNECTED
REGISTRATION REQUEST IDENTIFIER FIELD	IDENTIFIER FOR ASSOCIATING REQUEST WITH RESPONSE
LIFE TIME	TERM OF VALIDITY FOR REGISTRATION REQUEST
AUTHENTICATION INFORMATION	AUTHENTICATION INFORMATION FOR HA AUTHENTICATE MN

FIG. 33

STRUCTURAL ELEMENT	EXPLANATION
CN ADDRESS	CN ADDRESS TO WHICH MIP BINDING UPDATE MESSAGE HAS BEEN TRANSMITTED
LIFE TIME	TERM OF VALIDITY FOR AGING PROCESS
MESSAGE IDENTIFIER	MESSAGE IDENTIFIER WITH WHICH UPDATE BINDING HAS BEEN BROUGHT ABOUT

FIG. 34

STRUCTURAL ELEMENT	EXPLANATION
SESSION ID	<NAI OF MN><32 BIT VALUE><OPTION>
SESSION TIMER	TERM OF VALIDITY FOR THIS TRANSACTION
MOBILE CONNECTION	POINTER TO MOBILE CONNECTION
SCR REQUEST FLAG	FLAG INDICATING THAT SERVICE PROFILE OF CN IS BEING CHANGED
SCR REQUEST SOURCE ADDRESS	IP ADDRESS OF ENTITY THAT HAS REQUESTED SCR

FIG. 35

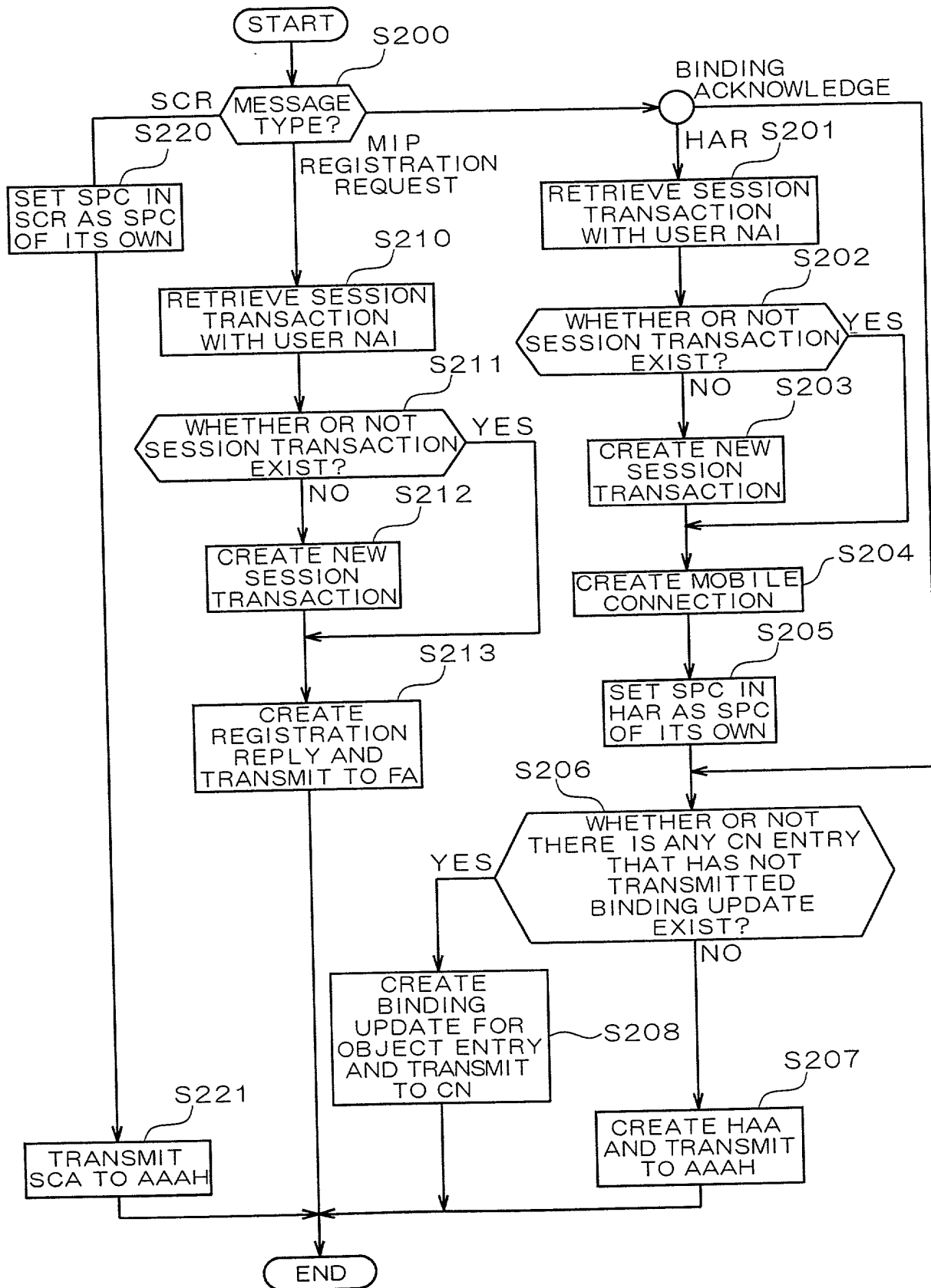
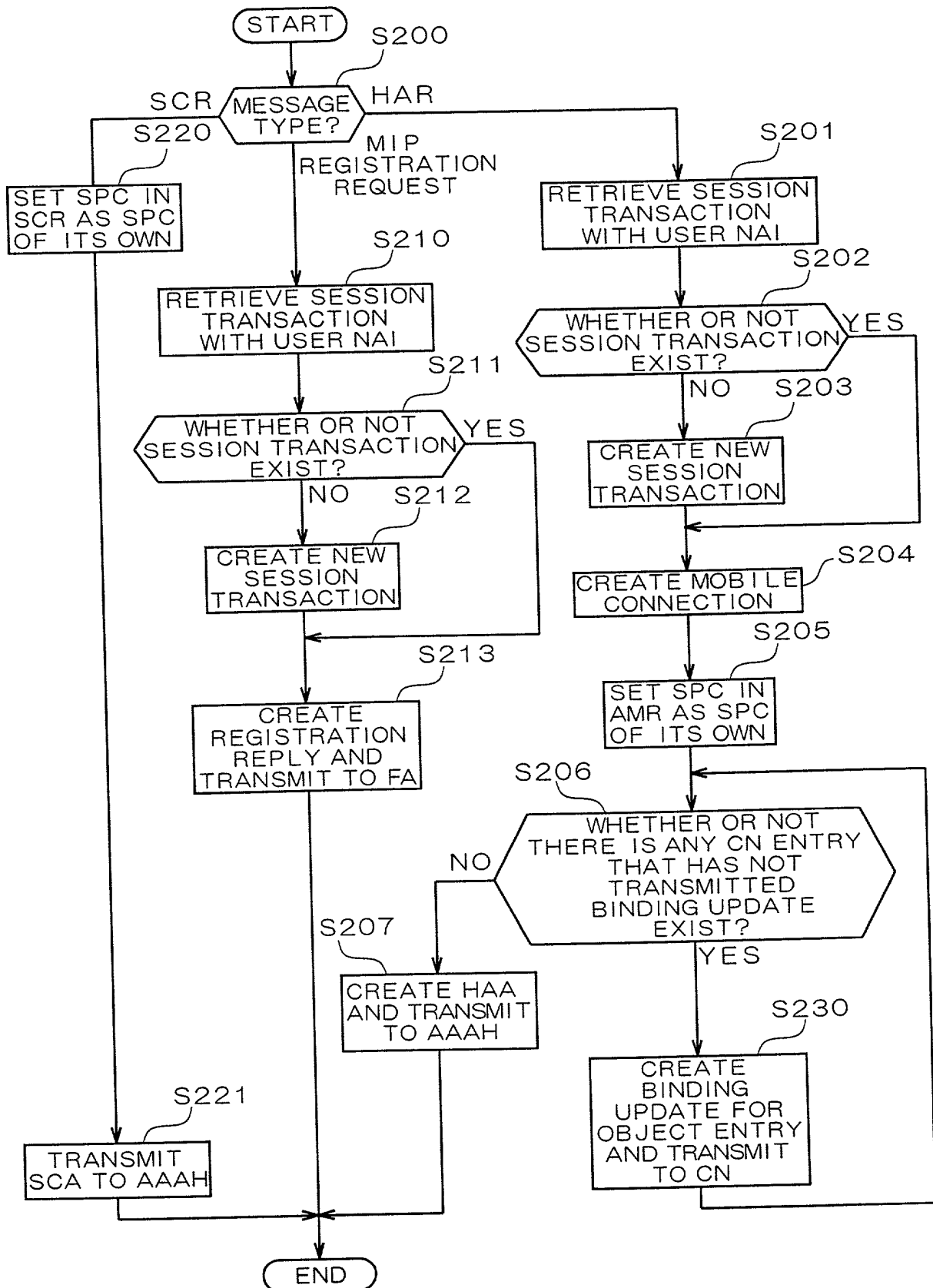


FIG. 36



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FIG. 37

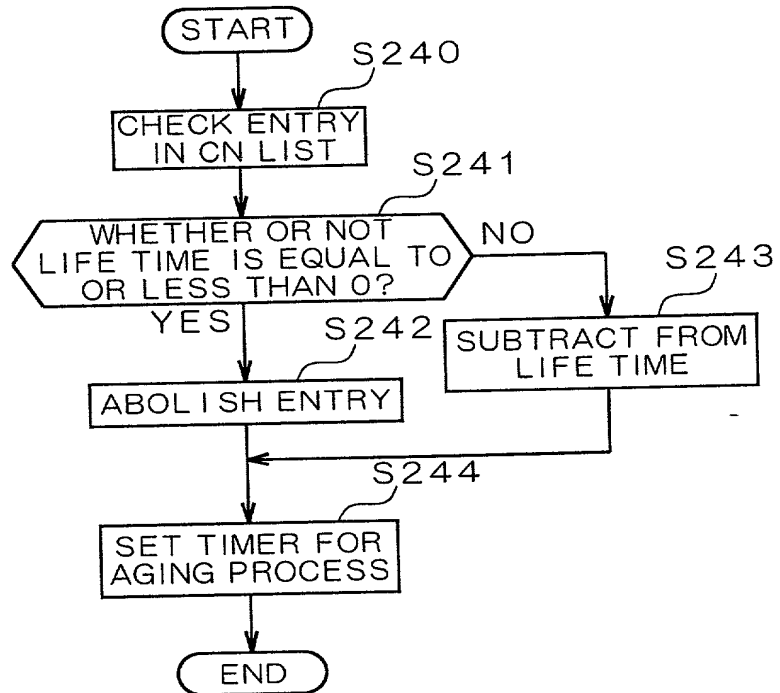


FIG. 38

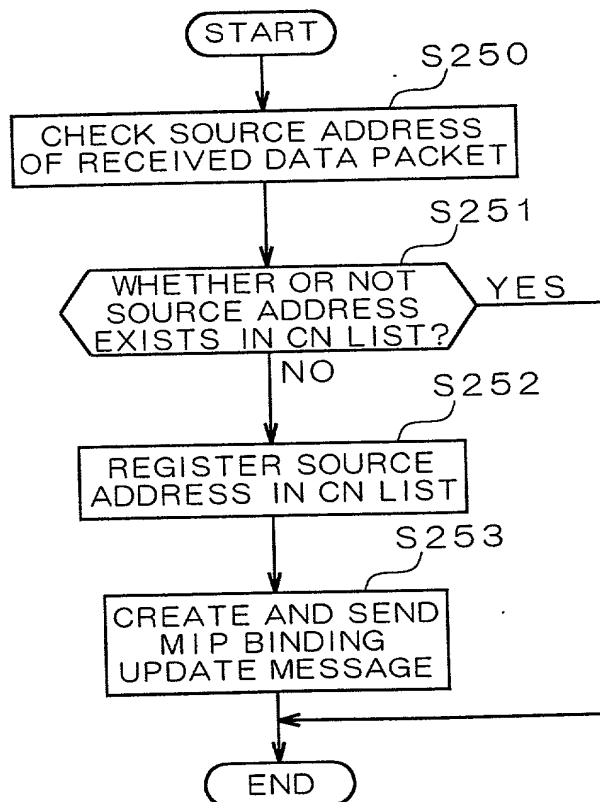


FIG. 39

STRUCTURAL ELEMENT	EXPLANATION
HOME ADDRESS	HOME ADDRESS ASSIGNED TO MN
CARE-OF-ADDRESS	IP ADDRESS OF FA TO WHICH MN CURRENTLY CONNECTED
LIFE TIME	TERM OF VALIDITY FOR BINDING CACHE
ENCAPSULATION METHOD	ENCAPSULATION METHOD BETWEEN CN AND FA

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FIG. 40

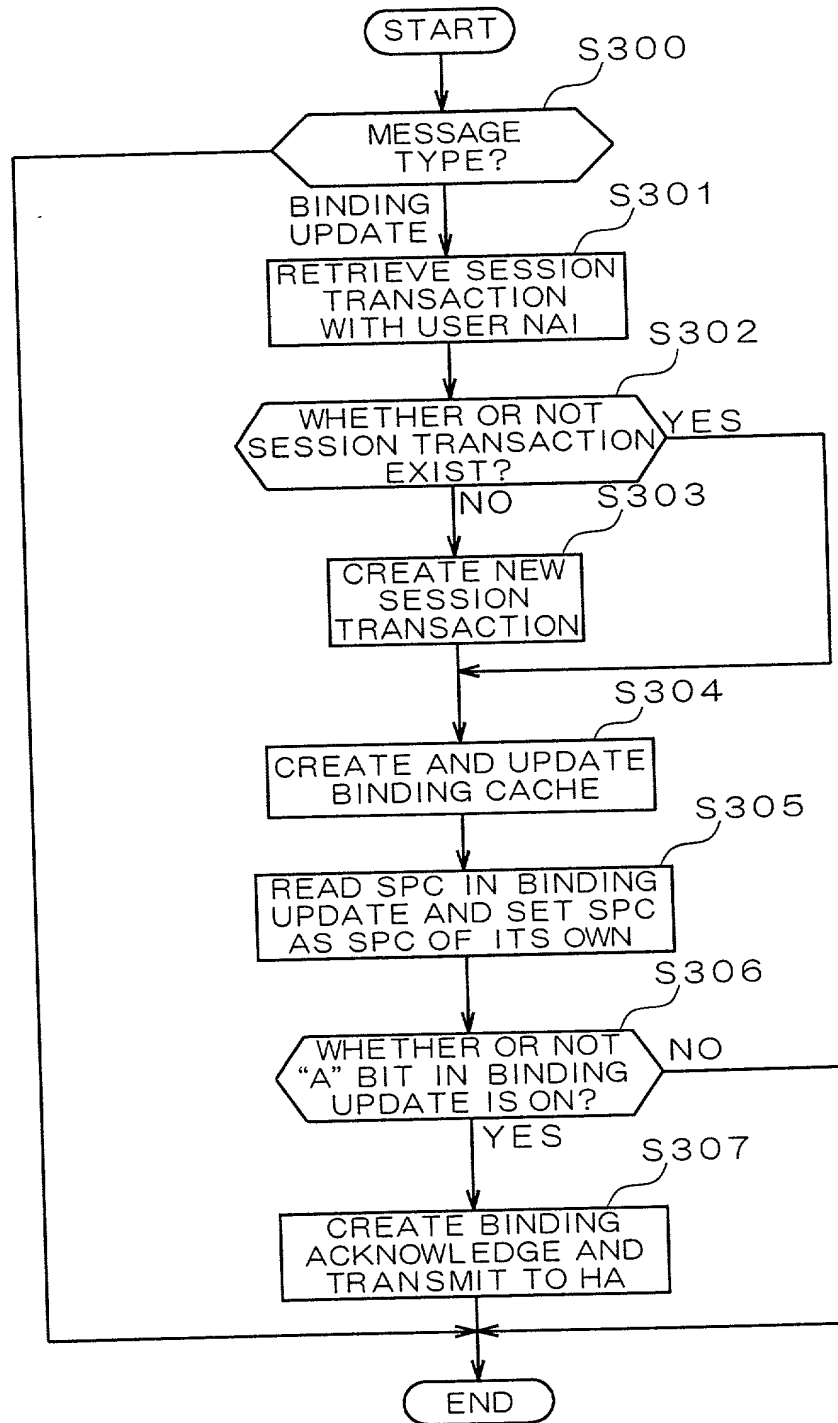


FIG. 41

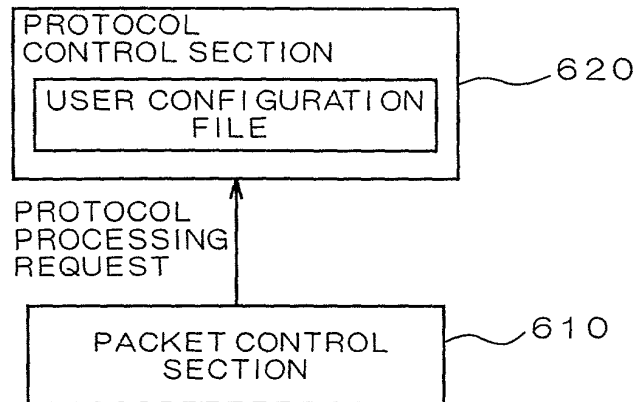


FIG. 42

STRUCTURAL ELEMENT	EXPLANATION
CARE-OF-ADDRESS 1	CARE-OF-ADDRESS IN ROUTER ADVERTISEMENT
CARE-OF-ADDRESS 2	CARE-OF-ADDRESS IN ROUTER ADVERTISEMENT

FIG. 43

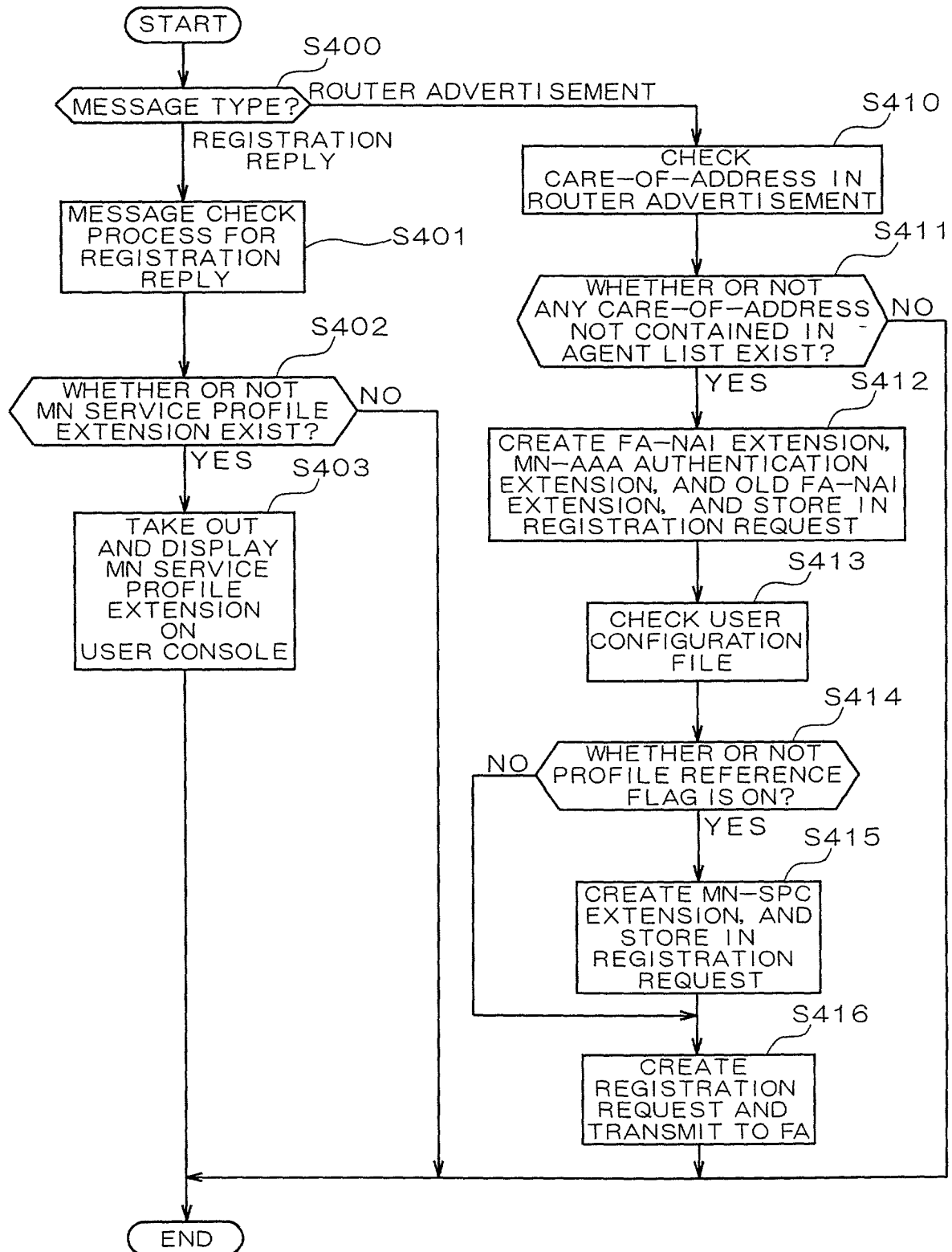


FIG. 44

TERMINAL WINDOW	
# SERVICE PROFILE DISPLAY	
# PROFILE NUMBER 1	
# OBJECT ENTITY 1010 0000	
# SOURCE IP ADDRESS 10.10.10.1	
# SOURCE NET MASK 255.255.255.0	
# DESTINATION ADDRESS 10.10.20.1	
# DESTINATION NET MASK 255.255.255.0	
# SOURCE PORT NUMBER 0	
# DESTINATION PORT NUMBER 0	
# SERVICE TYPE 4	
# QoS CLASS 2	
# BAND UPPER LIMIT 255	
# BAND ASSURANCE 0	
#	
#	

FIG. 45

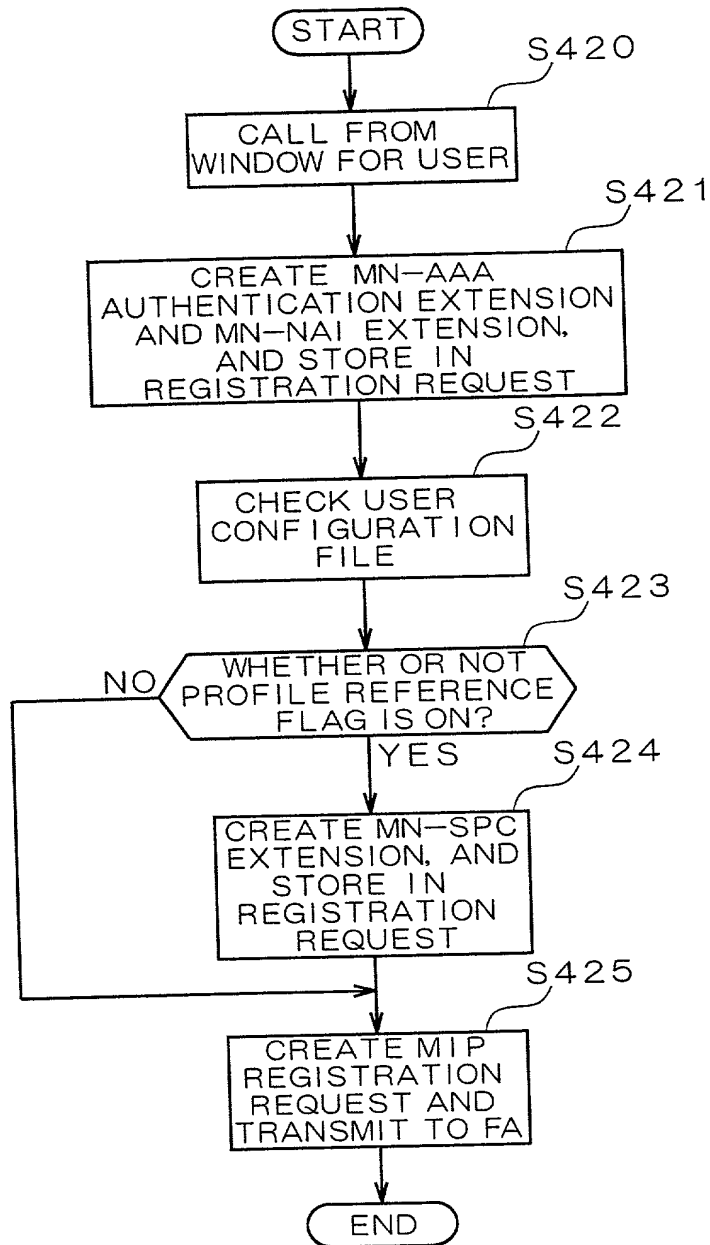


FIG. 46

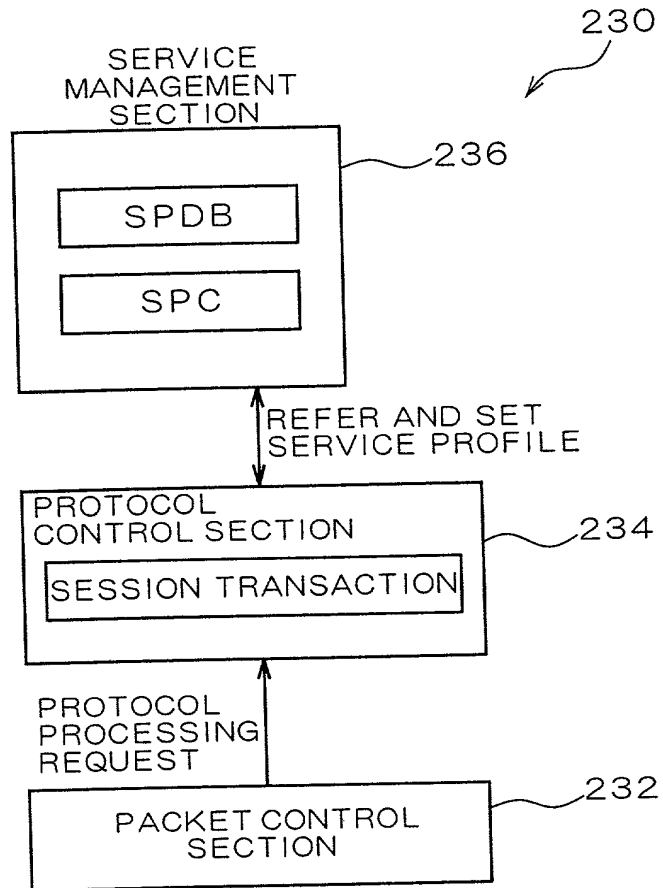


FIG. 47

STRUCTURAL ELEMENT	EXPLANATION
SESSION ID	<NAI OF MN><32 BIT VALUE><OPTION>
AAAH ADDRESS	IP ADDRESS OF AAAH SPECIFIED BY NAI OF MN
HA ADDRESS	IP ADDRESS OF HA ASSIGNED BY AAAF
OLD FA-NAI	NAI OF OLD FA WHERE MN MOVE TO NEW FA
PRESENT FA-NAI	NAI OF FA WHICH MN CONNECTED AT PRESENT
SCR REQUEST SOURCE ADDRESS	IP ADDRESS OF AAAH THAT HAS REQUESTED SCR
SPC	
SESSION TIMER	TERM OF VALIDITY FOR THIS TRANSACTION
STATUS	PROCESS WAITING, HA REQUESTING, AMA PROCESSING, HA CHANGE REQUESTING, FA CHANGE REQUESTING

FIG. 48

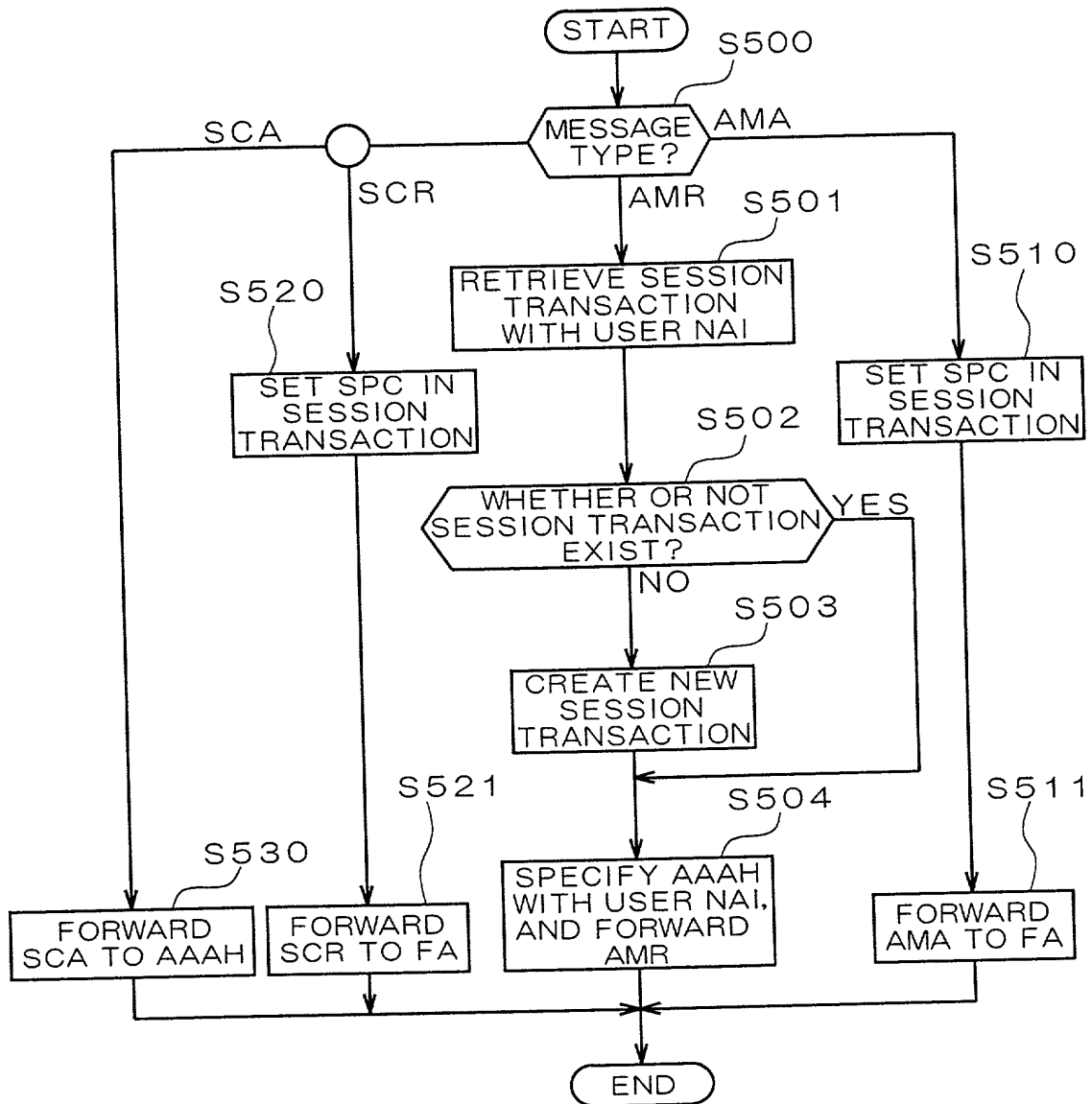


FIG. 49

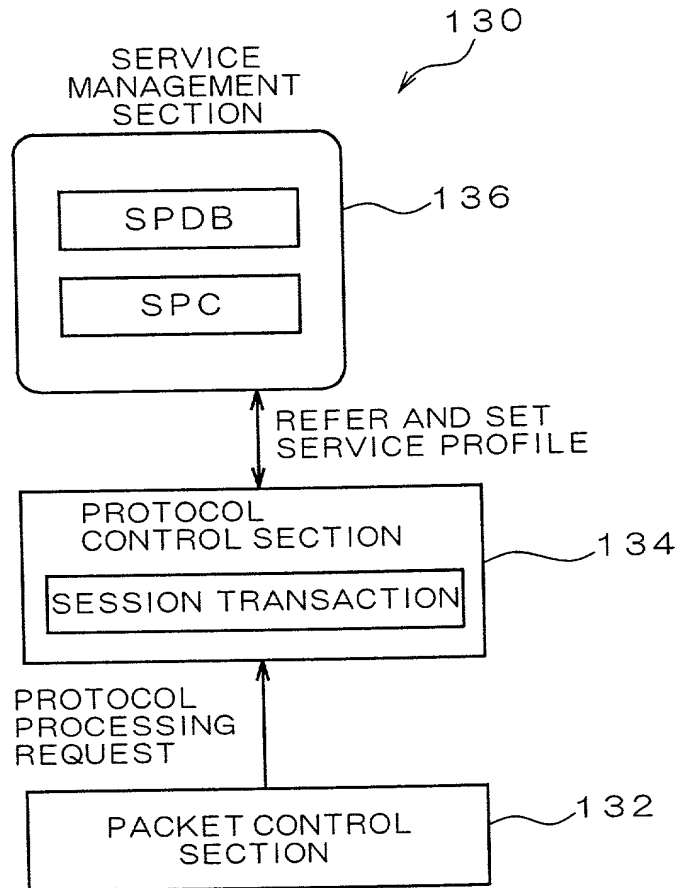


FIG. 50

STRUCTURAL ELEMENT	EXPLANATION
SESSION.ID	<NAI OF MN><32 BIT VALUE><OPTION>
HA ADDRESS	IP ADDRESS OF HA ASSIGNED BY AAAH
HA ASSIGNED AAAF ADDRESS	IP ADDRESS OF AAAF ASSIGNMENT REQUESTED BY AAAH
PRESENT AAAF ADDRESS	IP ADDRESS OF AAAF THAT HAS REQUESTED AMR
OLD AAAF ADDRESS	IP ADDRESS OF OLD AAAF WHEN AAAF IS CHANGED
SESSION TIMER	TERM OF VALIDITY FOR THIS TRANSACTION
SPC	
STATUS	PROCESS WAITING, HA REQUESTING, HA CHANGE REQUESTING, FA CHANGE REQUESTING, FA CHANGE REQUESTING 2

FIG. 51

STRUCTURAL ELEMENT	EXPLANATION
USER NAI	NAI OF MOBILE TERMINAL EQUIPMENT
USER SPI	FOR USE WHEN AUTHENTICATING USER
USER CONTRACT SERVICE CLASS	INDICATING AVAILABLE SERVICE, QoS, MAXIMUM NUMBER OF PROFILES OF THIS CLASS
ACTUAL SERVICE CLASS USED BY USER	CONTRACT SERVICE CLASS OF USER BY DEFAULT, BUT MAY BE HIGHER LEVEL SERVICE CLASS IS APPLICABLE DEPENDING ON CONDITION OF NETWORK UTILIZATION UNDER SUPERVISION OF NETWORK RESOURCE MANAGEMENT SYSTEM

FIG. 52

STRUCTURAL ELEMENT	CLASS				EXPLANATION
		1	2	3	
SERVICE CLASS IDENTIFIER	0				IDENTIFIER INDICATING CLASS
APPLICABLE SERVICE	ALL OFF	SEE FIG. 53	SEE FIG. 53	SEE FIG. 53	INDICATING AVAILABLE SERVICE IN UNIT OF SERVICE CLASS (ON/OFF)
MAXIMUM NUMBER OF PROFILES	0	1	1	1	MAXIMUM NUMBER OF PROFILES THAT IS ALLOWABLE FOR THIS SERVICE CLASS

FIG. 53

SERVICE TYPE	DIFFERENTIATED SERVICE	PACKET FILTERING	SECURITY SERVICE	BAND CONTROL
CLASS 0	OFF	OFF	OFF	OFF
CLASS 1	OFF	OFF	OFF	ON
CLASS 2	OFF	OFF	OFF	ON
CLASS 3	OFF	OFF	OFF	ON

FIG. 54

NUMBER	STRUCTURAL ELEMENT	EXPLANATION
0	RESERVATION VALUE	RESERVATION VALUE OF FUTURE
1	DIFFERENTIATED SERVICE	SERVICE ON BASIS OF DIFFERENTIATED SERVICE (RFC2474, 2475)
2	PACKET FILTERING	SERVICE FOR FILTERING PACKET WITH IP ADDRESS OF PACKET OR PORT NUMBER
3	SECURITY SERVICE	SECURE SERVICE USING IPSEC
4	BAND CONTROL	SERVICE FOR CONTROLLING AVAILABLE BAND FOR MOBILE TERMINAL EQUIPMENT

FIG. 55

STRUCTURAL ELEMENT	CLASS			
	0	1	2	3
CLASS IDENTIFIER	0	1	2	3
APPLICABLE QoS	0	2	3	4

FIG. 56

QoS	0	1	2	3	4
AVAILABLE BAND	NOT AVAILABLE	0~100 (kbps)	0~255 (kbps)	0~512 (kbps)	0~1500 (kbps)
BAND ASSURANCE	NO	YES	NO	NO	NO

FIG. 57

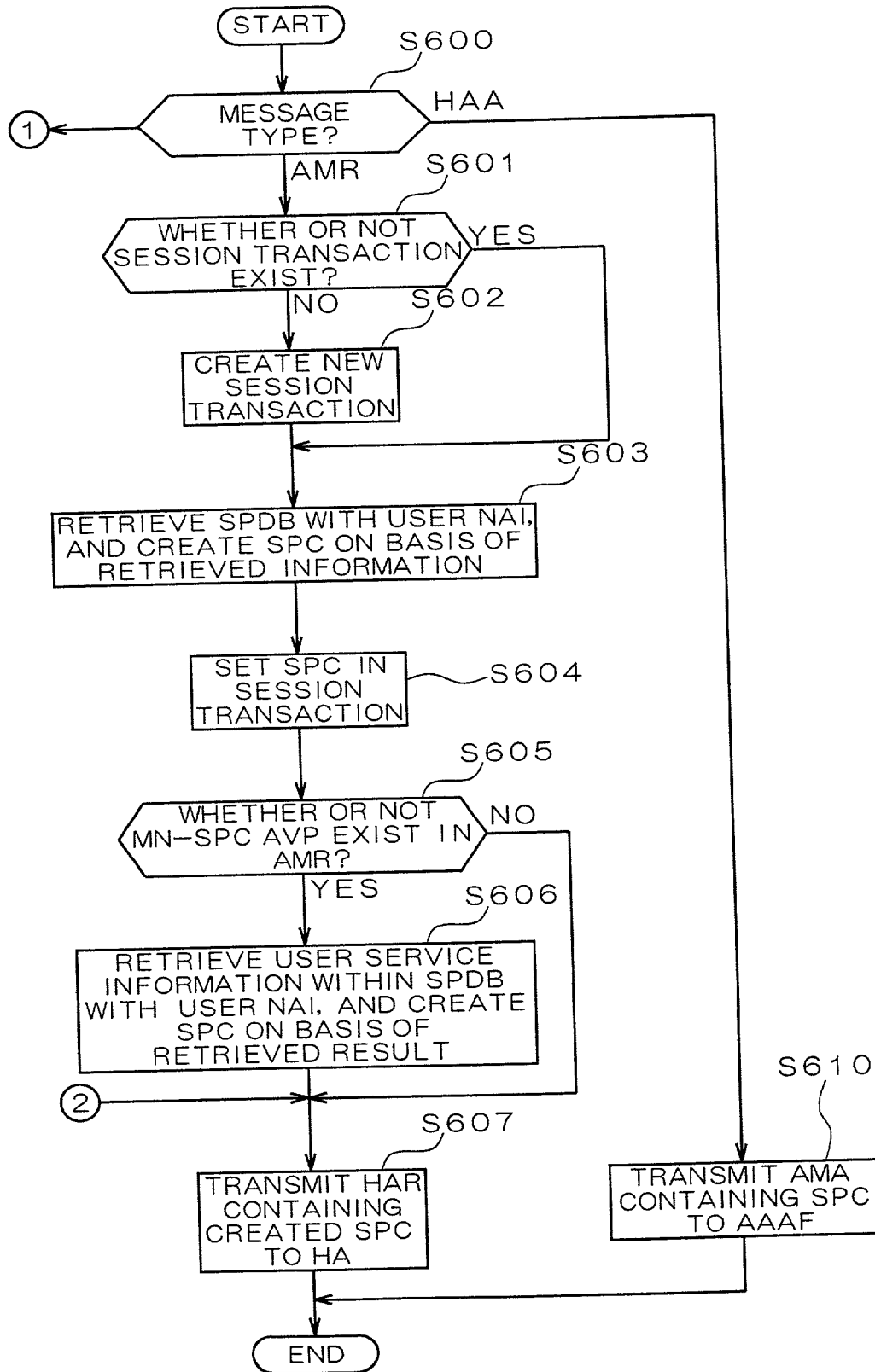


FIG. 58

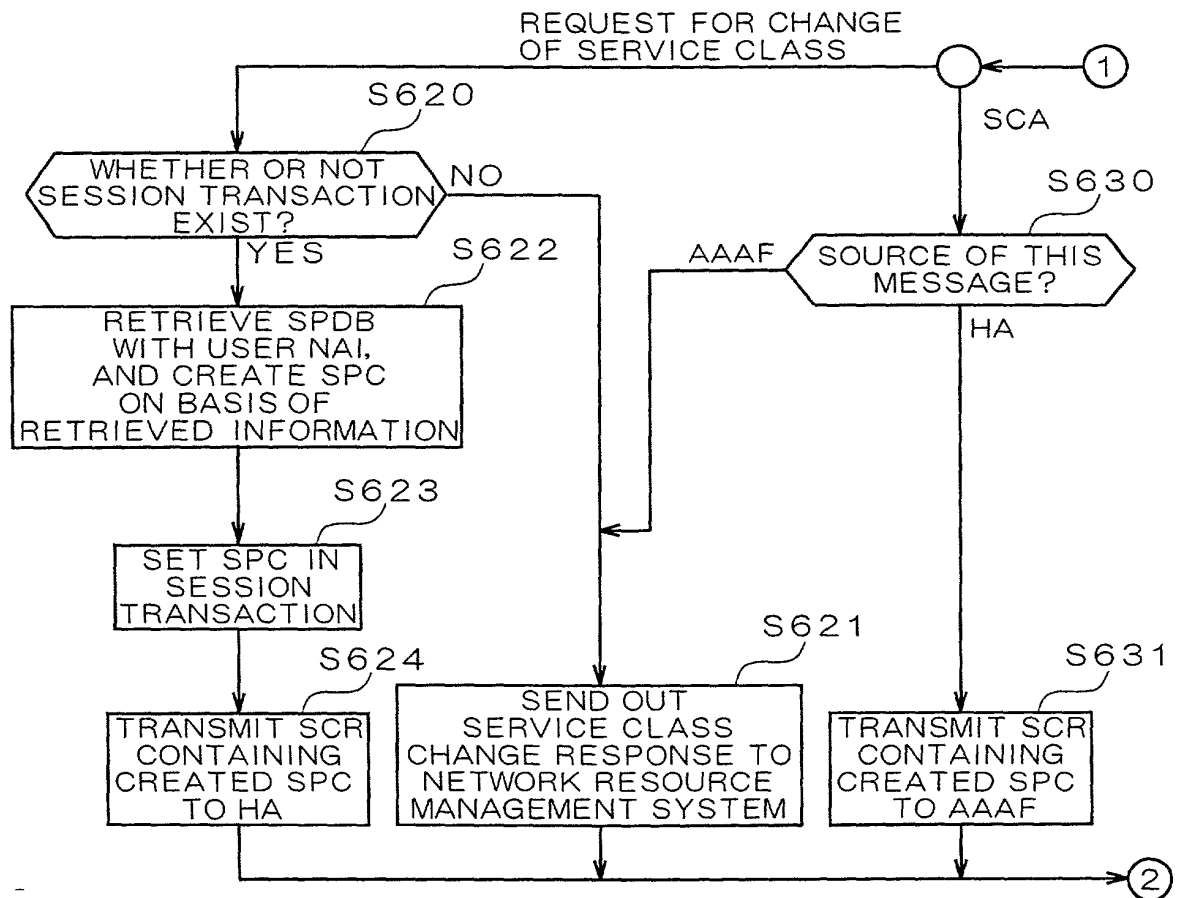


FIG. 59

MANAGEMENT ID	MANAGEMENT ENTITY (IP ADDRESS)	MAXIMUM CIRCUIT USAGE EFFICIENCY (%)	THRESHOLD OF MAXIMUM CIRCUIT USAGE EFFICIENCY (%)
5	10. 10. 10. 1	45	70
12	10. 10. 20. 1	42	70
3	10. 10. 30. 1	35	70

FIG. 60

NA I	CONTRACT SERVICE CLASS	SERVICE CLASS ACTUALLY USED	STATUS
Aaa@xxx	1	2	NORMAL
Bbb@yyy	2	2	NORMAL
Ccc@yyy	1	1	NORMAL

FIG. 61

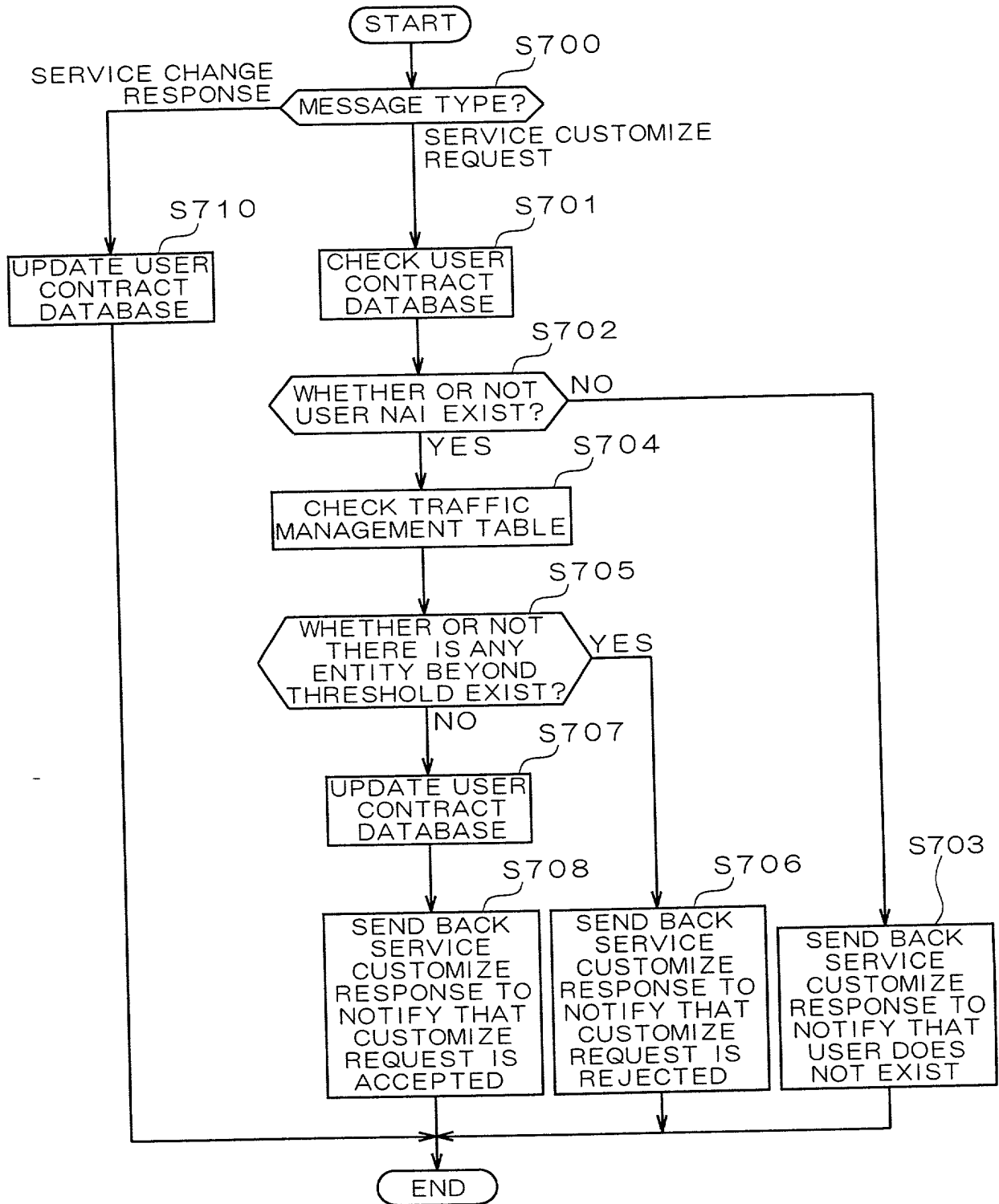


FIG. 62

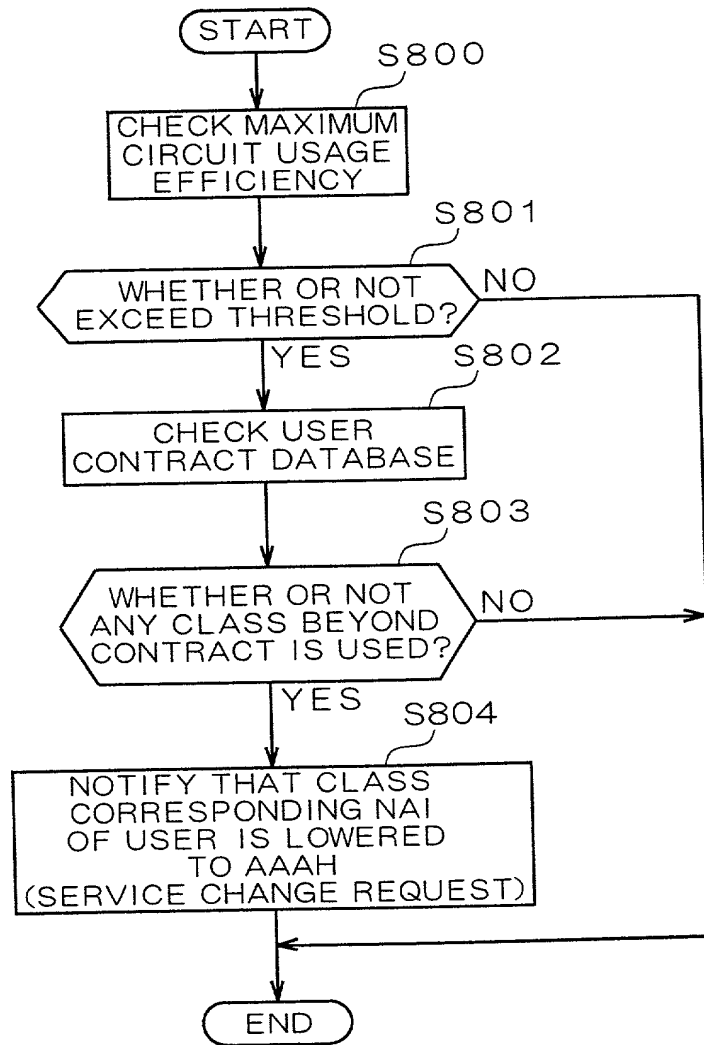
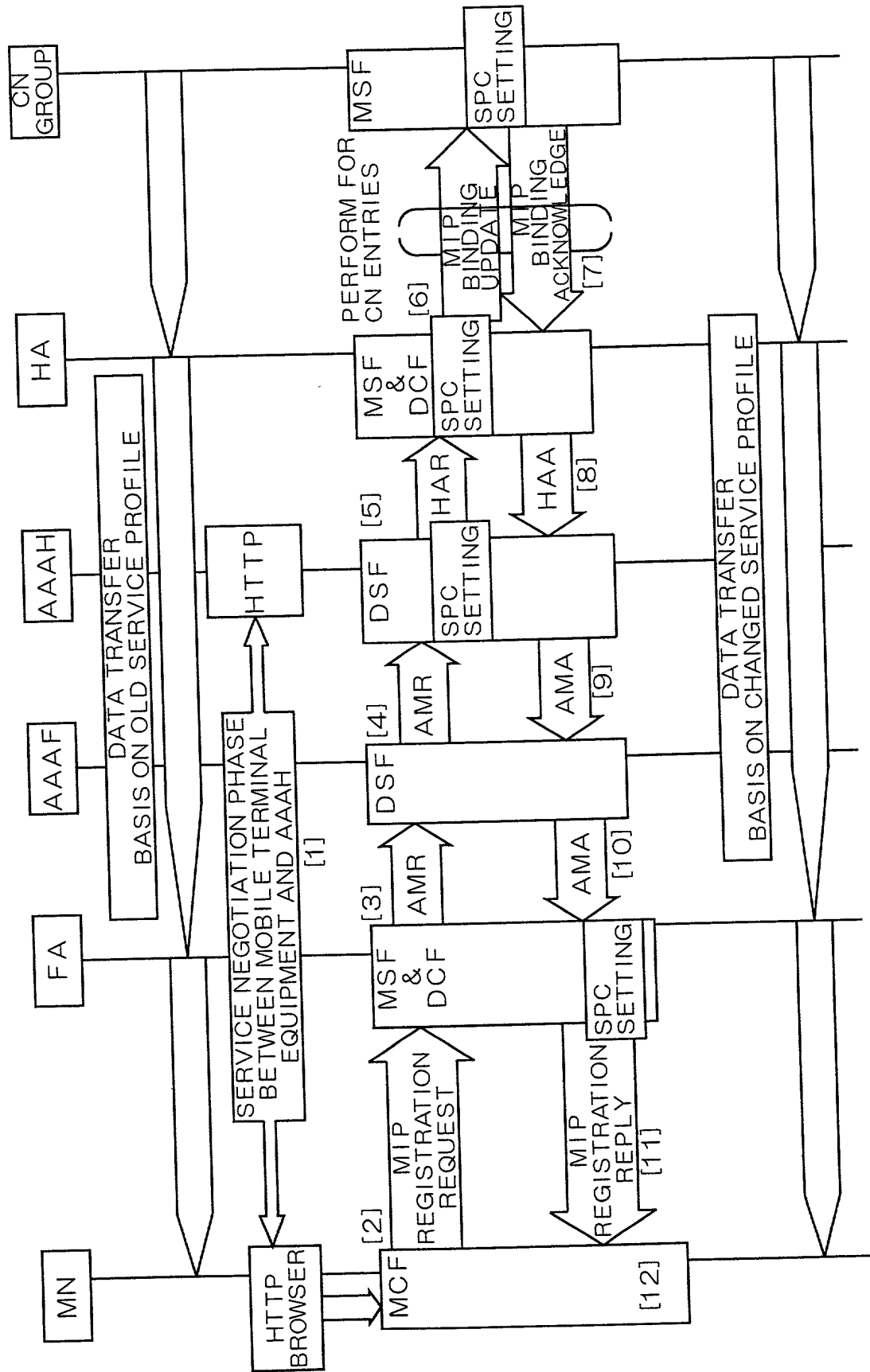


FIG. 63



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FIG. 64

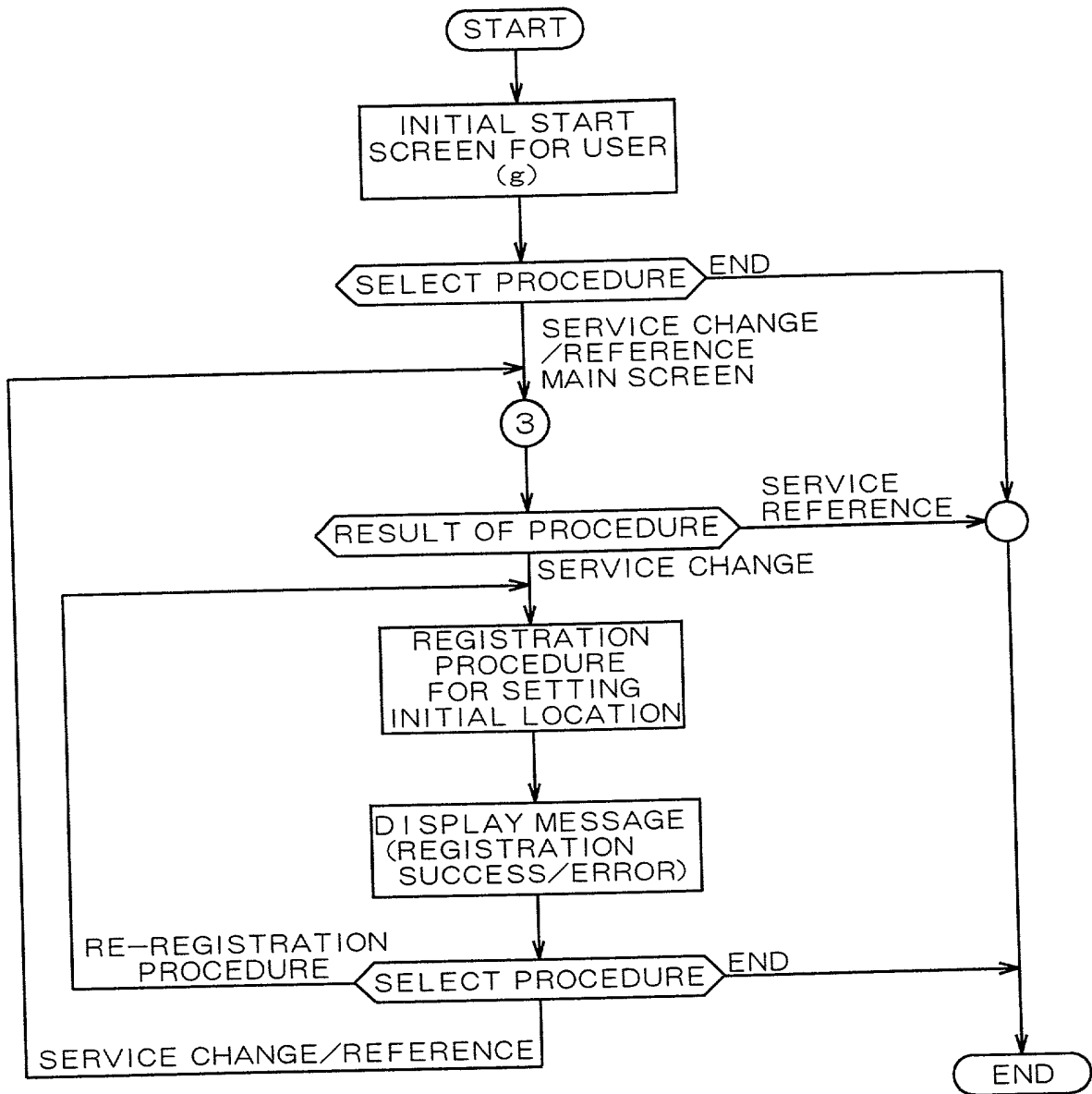


FIG. 65

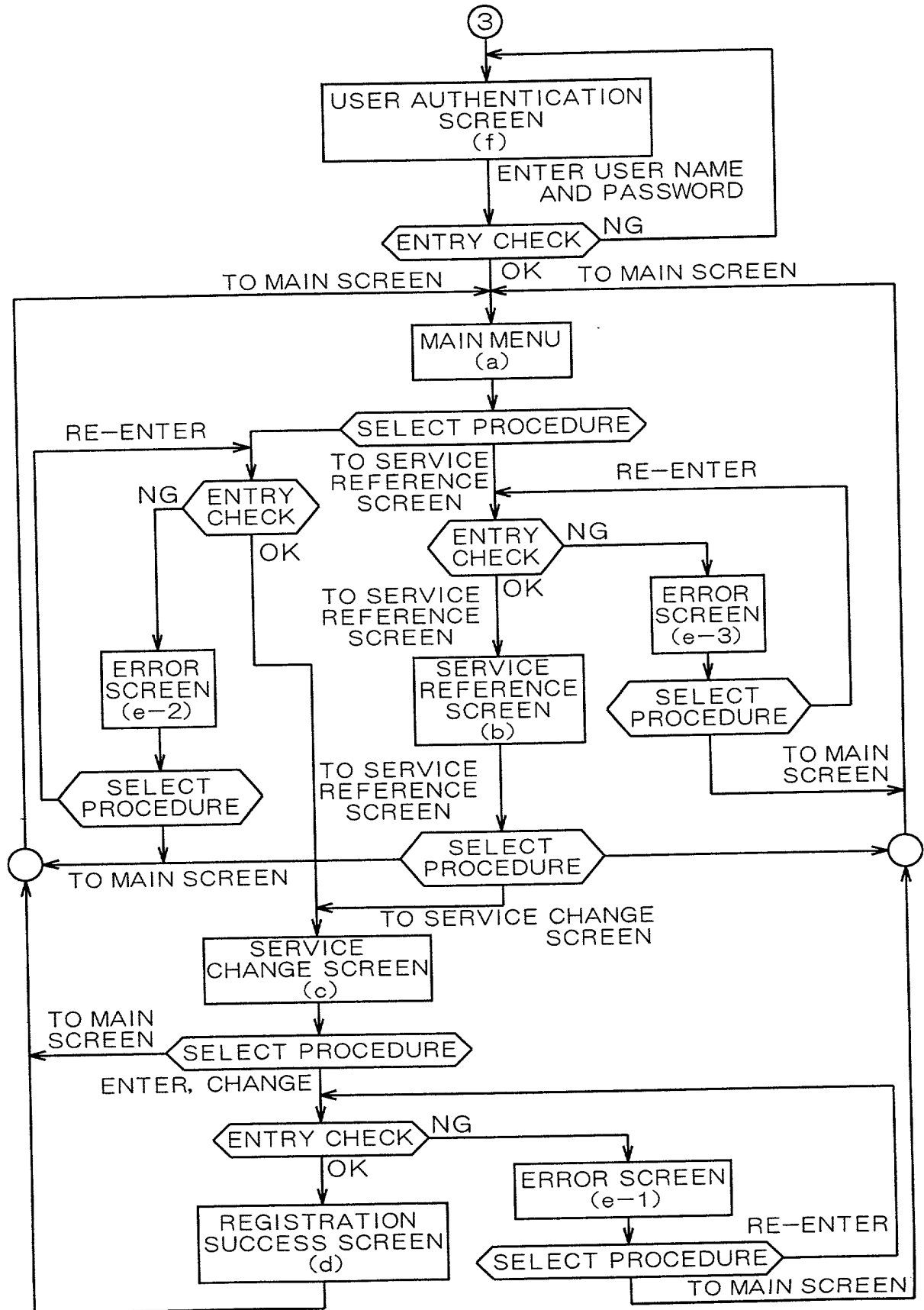


FIG. 66

ID	NAME OF WUI PROCESS	TITLE OF FILE	NOTE
a	MAIN SCREEN	Service.php3	MAIN SCREEN FOR SERVICE CHANGE SYSTEM
b	SERVICE REFERENCE SCREEN	Service.php3	SERVICE REGISTRATION INFORMATION AT PRESENT IS DISPLAYED.
c	SERVICE CHANGE SCREEN	Service.php3	SERVICE REGISTRATION INFORMATION AT PRESENT AND RANGE OF SERVICE CHANGE AREA DISPLAYED. REQUEST FOR CHANGING SERVICE IS AVAILABLE IN RANGE OF SERVICE CHANGE.
d	REGISTRATION SUCCESS SCREEN	Success.php3	REGISTRATION SUCCESS SCREEN IS DISPLAYED WHEN REQUEST FOR CHANGING SERVICE IS SUCCESSFUL.
e-1	ERROR SCREEN	Err.php3	SERVICE CHANGE ERROR
e-2	ERROR SCREEN	Err.php3	START UP SERVICE CHANGE SCREEN ERROR
e-3	ERROR SCREEN	Err.php3	SERVICE REFERENCE SCREEN START UP ERROR
f	ISP AUTHENTICATION SCREEN	Service.php3	USER AUTHENTICATING SCREEN FOR ISP
g	INITIAL START SCREEN FOR USER	User.html	LOCAL PAGE FOR USER. INITIAL LOCATION REGISTRATION REQUEST PROCEDURE IS CALLED FROM THIS PAGE.

FIG. 67

SERVICE CHANGE SYSTEM (MAIN SCREEN)	
SERVICE CHANGE SYSTEM	
NAI :	mn-1@xxxxxxxx
SPI :	128
<div>TO SERVICE REFERENCE SCREEN</div> <div>CLEAR</div> <div>TO SERVICE CHANGE SCREEN</div>	

FIG. 68

SERVICE CHANGE SYSTEM (SERVICE REFERENCE SCREEN)	
# CONTRACT SERVICE CLASS	2
PROFILE NUMBER	1
OBJECT ENTITY	1010 0000
SOURCE IP ADDRESS	10.10.10.1
SOURCE NET MASK	255.255.255.0
DESTINATION ADDRESS	10.10.20.1
DESTINATION NET MASK	255.255.255.0
SOURCE PORT NUMBER	0
DESTINATION PORT NUMBER	0
SERVICE TYPE	4
QoS CLASS	2
BAND UPPER LIMIT	255
BAND ASSURANCE	OFF
<div>TO SERVICE CHANGE SCREEN</div> <div>TO MAIN SCREEN</div>	

FIG. 69

SERVICE CHANGE SYSTEM (SERVICE CHANGE SCREEN)				
CONTRACT SERVICE CLASS : 2	STATUS OF USAGE	SERVICE WITHIN CONTRACT	SERVICE BEYOND CONTRACT	DESIRABLE VALUE
<input type="checkbox"/> SERVICE TYPE 1 <input type="checkbox"/> SERVICE TYPE 2 <input type="checkbox"/> SERVICE TYPE 3 <input type="checkbox"/> SERVICE TYPE 4 [SERVICE FOR BAND CONTROL] QOS CLASS BAND UPPER LIMIT (BAND ASSURANCE)	NOT AVAILABLE NOT AVAILABLE NOT AVAILABLE NOW APPLYING 2 255 (off)	0~2 100 (on) / 255 (off)	0~4 100 (on) / 255 (off) / 512 (off) / 1500 (off)	3 1500 (off)
<input type="button" value="APPLICATION"/>		<input type="button" value="TO MAIN SCREEN"/>		<input type="button" value="TO SERVICE CHANGE SCREEN"/>
				<input type="button" value="CLEAR"/>

FIG. 70

SUCCESS IN REGISTRATION
<p>SERVICE CONTENTS IS CHANGED IN SUCCESSFULLY. (INITIAL LOCATION REGISTERING PROCEDURE IS REQUIRED. PRESS SPECIFIC KEY BOARD.)</p> <p>OK</p>

FIG. 71

ERROR
ENTERING ERROR.
<div>ENTER AGAIN</div> <div>TO MAIN SCREEN</div>

FIG. 72

PASSWORD	
ENTER USER NAME AND PASSWORD.	
USER NAME :	postgres
PASSWORD :	xxxxxxx
OK	CLEAR
CANCEL	

FIG. 73

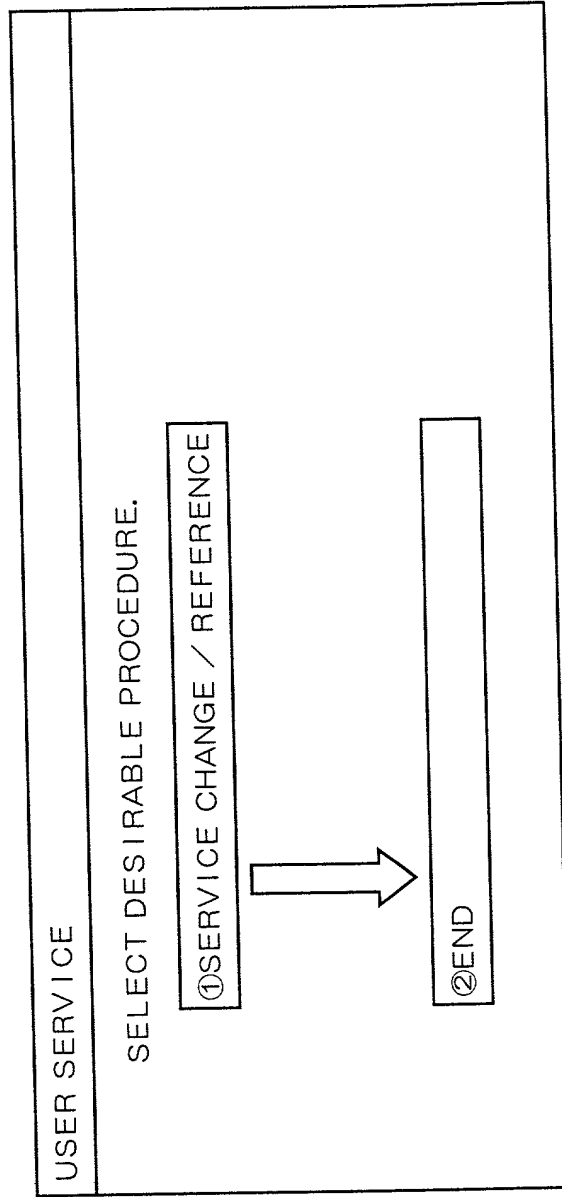


FIG. 74

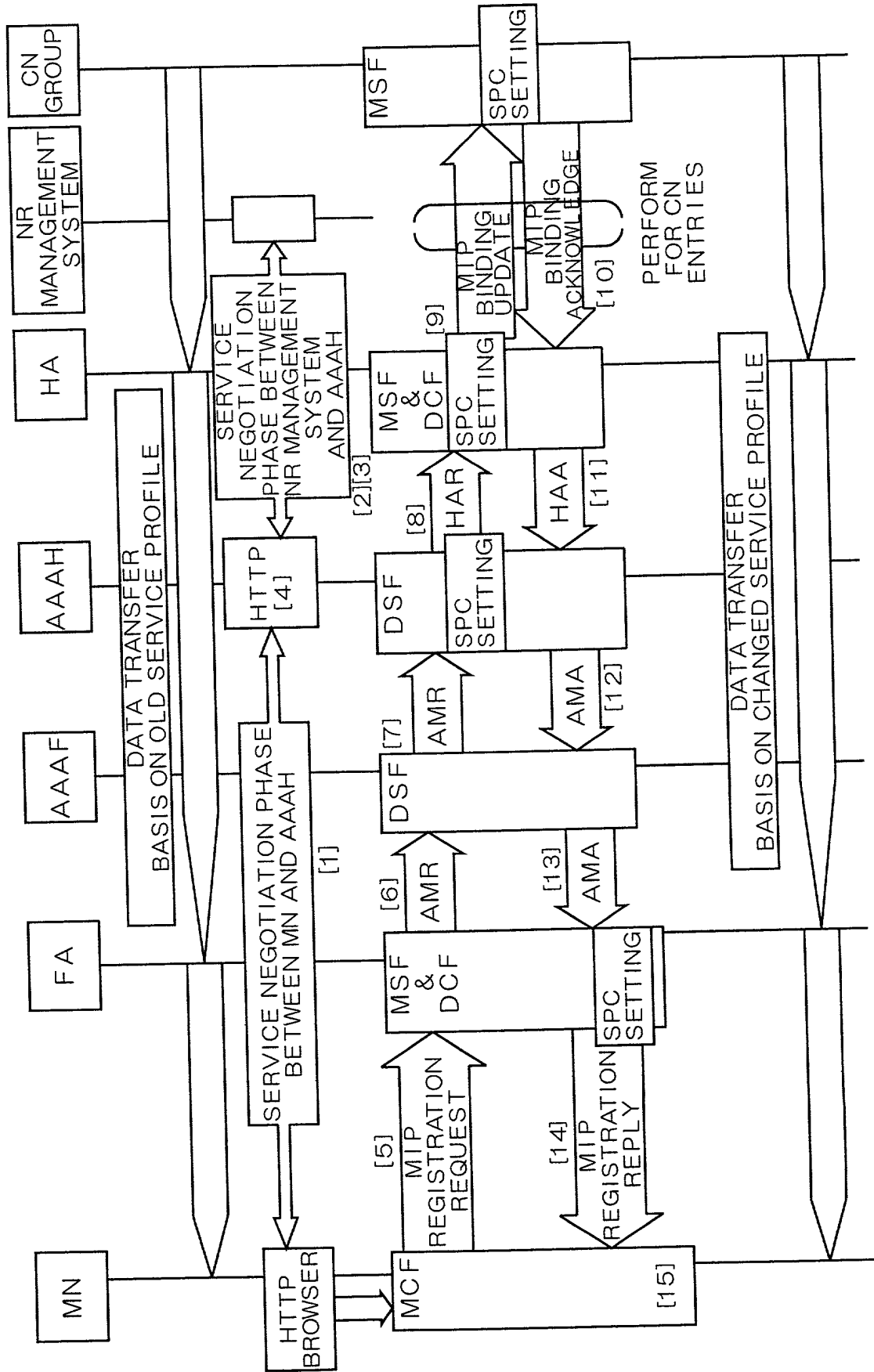


FIG. 75

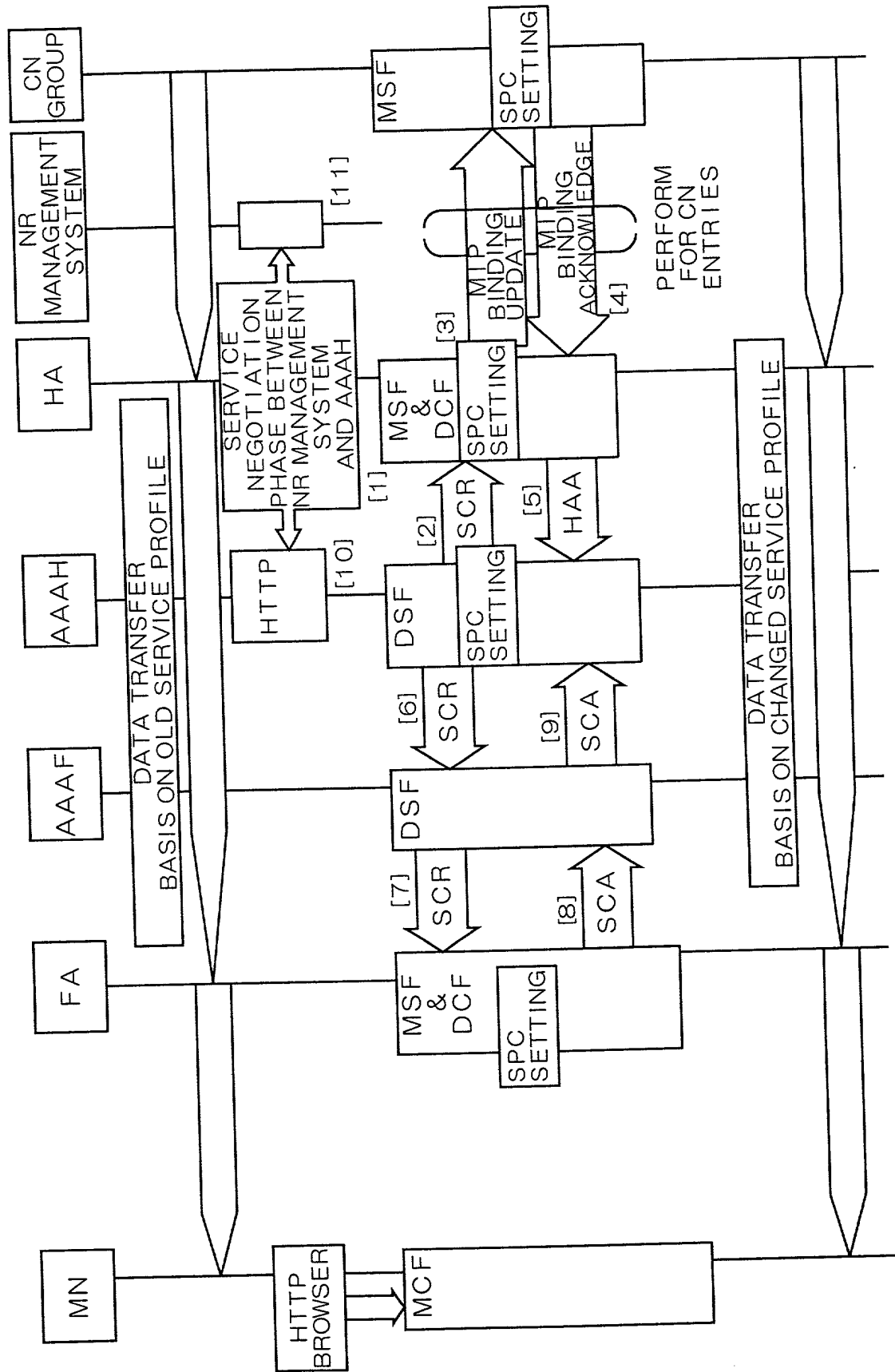
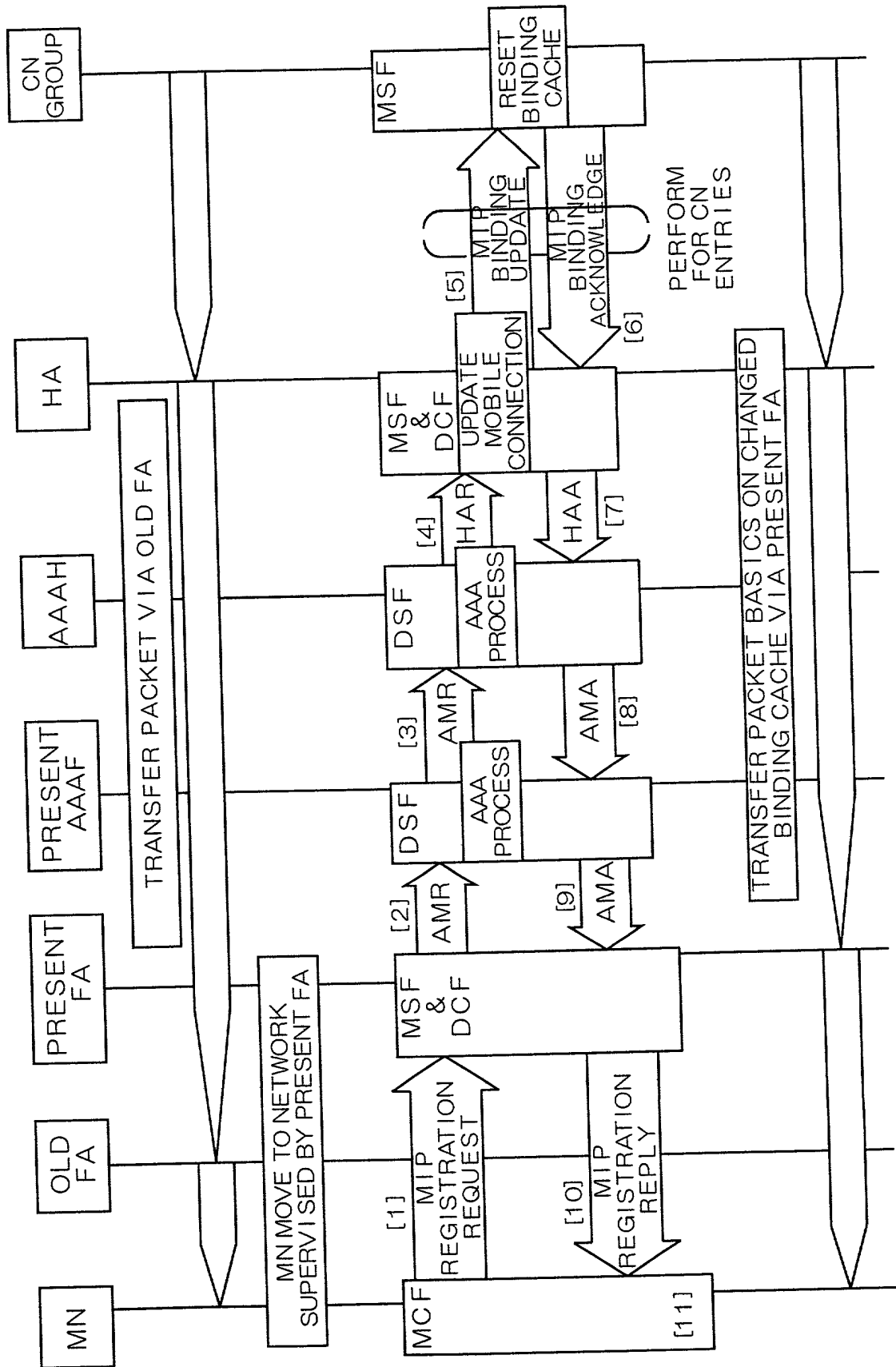
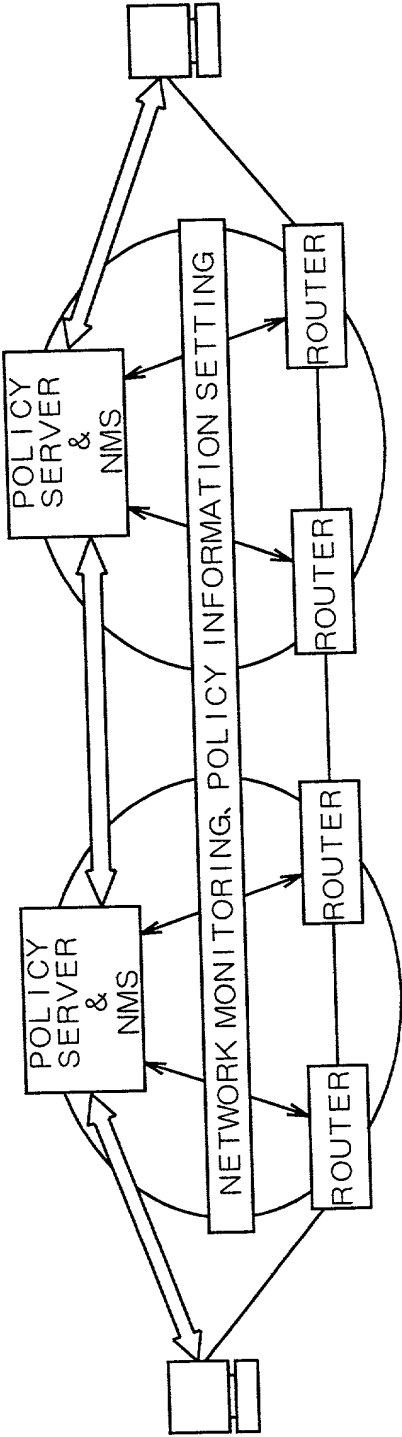


FIG. 76





PRIOR ART

FIG. 77

FIG. 77 is a block diagram of a network system according to the present invention.

FIG. 78

PRIOR ART

